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MCAS EL TORO, CA  
SSIC 5000-33a

**PUBLIC INFORMATION MATERIALS PACKAGE FOR RESTORATION  
ADVISORY BOARD (RAB) MEETING HELD ON 26 JANUARY 2005 -  
INCLUDES AGENDA; 1 DECEMBER 2004 MEETING MINUTES; JULY 2004 -  
JULY 2005 MEETING SCHEDULE; AND VARIOUS HANDOUTS**

01/26/2005

BROWN AND CALDWELL

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Pages: 23, 35-37, 40, 112, 115, 118, 121, 124, 128, 131, 134, 137, 143

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# **Public Information Materials**

**1/26/05**

## **Restoration Advisory Board Meeting**

**73<sup>rd</sup> Meeting**

**Held at Irvine City Hall**

**Irvine, CA**

### **Materials/Handouts Include:**

- \*RAB Meeting Agenda/Public Notice – 1/26/05 RAB meeting – 73<sup>rd</sup> meeting.
- \*Meeting Minutes from the December 1, 2004 RAB meeting – 72<sup>nd</sup> Meeting.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (July 2004-July 2005).
- Proposed RAB Community Co-Chair Election Process for RAB Meeting January 26, 2005.
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro RAB Membership Roster (revised July 2004).
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- MCAS El Toro Installation Program Site Location Map
- Internet Access – Environmental Web Sites.
- One-Page Glossary of Technical Terms.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Navy – Policy for Optimizing Remedial and Removal Actions Under the Environmental Restoration Programs, April 2004.
- Department of Defense – Institutional Controls, spring 1997.
- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
- Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
- U.S. EPA Fact Sheet – A Citizen's Guide to Natural Attenuation, October 1996.
- Brochure – Commonly Asked Questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
- U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
- *Presentation-* State of the Station by F. Andrew Piszkin, BRAC Environmental Coordinator and Navy RAB Co-Chair, for the January 26, 2005 Restoration Advisory Board Meeting for Former MCAS El Toro.

\* Mailed to all RAB meeting mailer recipients on 1/20/05.

### **Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)**

- U.S. Environmental Protection Agency – Final Radiological Release Report for ISP Site 8 (Unites 2, 3, & 5), IRP Site 12 and IRP Site 25 (Bee Canyon Wash Outfall), Former Marine Corps Air Station El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Rich Muza, Remedial Project Manager, U.S. EPA (letter dated December 6, 2004).
- U.S. EPA – EPA Review Comments on the Draft Technical Memorandum, Aquifer Test, IRP Site 2, Magazine Road Landfill, Former Marine Corps Air Station El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Rich Muza, Remedial Project Manager, U.S. EPA (letter dated December 20, 2004).
- U.S. EPA – Draft Radiological Release Report for Former Sites of the Radium Plaque Adaptometer Building and Aircraft Parts Yard, Former Marine Corps Air Station El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Rich Muza, Remedial Project Manager, U.S. EPA (letter dated January

10, 2005).

- U.S. EPA – Approval of the 100 Percent Design Submittal, Shallow Groundwater Unit Remedial Action Installation Restoration Program Site 24 Volatile Organic Compounds Source Area, Former Marine Corps Air Station El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Rich Muza, Remedial Project Manager, U.S. EPA (letter dated January 20, 2005).
- U.S. EPA – Federal Facility Agreement (FFA) Appendix A Schedule and Extension Request for Installation Restoration Program (IRP) Sites 1, 2, 17, 18, and 24, Former Marine Corps Air Station El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Rich Muza, Remedial Project Manager, U.S. EPA (letter dated January 25, 2005).

#### **Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)**

- Cal-EPA, Department of Toxic Substances Control (DTSC) – Summary Reports for Aerial Photograph Anomaly (APHO) 106, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated December 7, 2004).
- Cal-EPA, DTSC – Approval of Closure Report for Temporary Accumulation Area (TAA) 130A & 130B, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated December 10, 2004).
- Cal-EPA, DTSC – Comments on the Closure Report for Temporary Accumulation Area (TAA) 769, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated December 14, 2004).
- Cal-EPA, DTSC – Approval of Summary Report for Aerial Photograph Anomaly (APHO) 120, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated December 21, 2004).
- Cal-EPA, DTSC – Comments on Work Plan for Temporary Accumulation Area (TAA) 7, TAA 651B, Aerial Photograph Anomaly (APHO 122), Underground Storage Tank (UST 764A)/Oil Water Separator (OWS 764B), Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated December 30, 2004).
- Cal-EPA, DTSC – Comments on Draft Technical Memorandum, Aquifer Test IRP Site 2, Magazine Road Landfill, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated January 12, 2004).
- Cal-EPA, DTSC – Approval of 100% Design Submittal, Shallow Groundwater Unit Remedial Action, IRP Site 24, Volatile Organic Compounds Source Area, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Manny Alonzo, Unit Chief, DTSC (letter dated January 14, 2005).
- Cal-EPA, DTSC – Approval Summary Report for Aerial Photograph Anomaly (APHO) 101, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated January 18, 2005).
- Cal-EPA, DTSC – Radiological Release Reports, IRP Site 8 – (Units 2, 3, & 5), IRP Site 12, and IRP Site 25 (Bee Canyon Wash Outfall), Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated January 19, 2005).
- Cal-EPA, DTSC – Federal Facility Agreement (FFA) Extension Request for Installation Restoration Program (IRP) Site 1, 2, 17, 18, 24, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Senior Hazardous Substances Engineer, DTSC (letter dated January 21, 2005).

#### **California Regional Water Quality Control Board (RWQCB), Santa Ana Region**

- No Items Submitted

#### **RAB Subcommittee Handouts and Letters (generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)**

- No Items Submitted

**Additional Information Submitted – 1/26/05 RAB Meeting**

- Irvine Ranch Water District – Irvine Desalter Project Update, To: MCAS El Toro Restoration Advisory Board, From: Steve Malloy (Memorandum dated January 26, 2005).

**Former MCAS El Toro  
Restoration Advisory Board**

**Irvine City Hall  
One Civic Center Plaza, Irvine  
♦ Location for RAB Meeting:  
"City Council Chambers"**

**January 26, 2005  
6:30 - 9:00 p.m.  
73<sup>rd</sup> RAB Meeting**

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**RAB Subcommittee Meeting  
5:00-6:00 p.m., Room L-104**

**AGENDA**

**RAB members that are unable to attend please call either Andy Piszkin, Marine Corps/Navy RAB Co-Chair at (949) 726-5398 or (619) 532-0784 -or- Bob Woodings, RAB Community Co-Chair at (949) 461-3481.**

**Question and Answer (Q&A) Ground Rules**

- Q&A follows individual presentations; time designated for presentations includes Q&A time.
- "Open Q&A" session (environmental topics) is at the end of the New Business segment.
- After adjournment, Marine Corps/Navy representatives are available to answer more questions.

**Welcome/Introductions/Agenda Review (6:30-6:40)**

Andy Piszkin  
Marine Corps/Navy RAB Co-Chair

**Old Business (6:40-7:15)**

Approval of 12/1/04 Minutes (6:40-6:45)

Bob Woodings  
RAB Community Co-Chair

Announcements/Review of Action Items (6:45-6:55)

Andy Piszkin & Bob Woodings

Subcommittee Meeting Report (6:55-7:05)

Marcia Rudolph  
RAB Subcommittee Chair

Follow-up Announcements/Responses/Q&A (7:05-7:15)

Andy Piszkin

**New Business (7:15-8:50)**

Regulatory Agency Comment Update (7:15-7:25)  
*Federal and State Regulatory Oversight of Environmental  
Restoration and Cleanup at MCAS El Toro.*

*Federal Rep*  
Richard Muza  
U.S. EPA

*State Rep*  
Tayseer Mahmoud  
Cal/EPA DTSC

- RAB Community Co-Chair Election (7:25-7:35)  
*Annual election of Community RAB Co-Chair - review Co-Chair responsibilities, nominations and voting.*

Andy Piszkin

**BREAK – 10 minutes**

- State of the Station – Annual Status Update of Environmental Activities for the Installation Restoration Program (IRP) and Compliance Program at Former MCAS El Toro (7:45-8:45)  
*Covers all categories of environmental sites at Former MCAS El Toro, including IRP Operable Units and Sites, Compliance Program Sites and other Locations of Concern.*

Andy Piszkin

Open Q&A (Environmental Topics) (8:45-8:55)

Andy Piszkin

**Meeting Summary & Closing (8:55-9:00)**

Andy Piszkin & Bob Woodings

Meeting Evaluation & Topic Suggestions for Future Meetings

P U B L I C   N O T I C E

***FORMER  
MARINE CORPS AIR STATION EL TORO***

**Restoration Advisory Board Meeting**

Restoration Advisory Board (RAB) meetings provide community members and the general public a first-hand opportunity to learn more about the environmental cleanup of former MCAS El Toro. Project managers from the Navy and the regulatory agencies make presentations and are available to answer your questions. Since 1994, concerned citizens and government representatives have been regularly meeting to discuss the environmental cleanup program. Your input is encouraged and appreciated.

**73<sup>rd</sup> Meeting**

**Wednesday, January 26, 2005 – 6:30-9:00 p.m.**

**Irvine City Hall, Council Chambers  
One Civic Center Plaza, Irvine**

**This RAB/Public meeting will feature the following presentations specific to Former MCAS El Toro:**

- **State of the Station – Annual Status Update of Environmental Activities for the Installation Restoration Program (IRP) and Compliance Program at Former MCAS El Toro.**

*Covers all categories of environmental sites at Former MCAS El Toro, including IRP Operable Units and Sites, Compliance Program Sites, and other Locations of Concern.*

**For more information about Environmental Programs at Former MCAS El Toro, please contact:**

**Base Realignment and Closure, Mr. Andy Piszkin, BRAC Environmental Coordinator,  
7040 Trabuco Road, Irvine, CA 92618 – (949) 726-5398 or (619) 532-0784**

## FORMER MARINE CORPS AIR STATION EL TORO

### RESTORATION ADVISORY BOARD MEETING

December 1, 2004

#### *MEETING MINUTES*

The 72<sup>nd</sup> Restoration Advisory Board (RAB) meeting for former Marine Corps Air Station (MCAS) El Toro was held Wednesday, December 1, 2004 at the Irvine City Hall. The meeting began at 6:34 p.m. These minutes summarize the discussions and presentations from the RAB meeting.

#### **WELCOME, INTRODUCTIONS, AGENDA REVIEW**

Mr. Andy Piszkin, Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) for MCAS El Toro and Marine Corps RAB Co-Chair, stated that Mr. Bob Woodings, the RAB Community Co-Chair would not be attending tonight's RAB meeting. The next RAB meeting is scheduled for Wednesday, January 26, 2004. Mr. Andy Piszkin asked Ms. Marcia Rudolph, RAB Subcommittee Chair, to lead the Pledge of Allegiance. He then asked for self-introductions and reviewed the agenda for tonight's meeting. The key presentations this evening will cover the Long-Term Aquifer Test at Installation Restoration Program Site 2 and an overview of the Storm Water Pollution Prevention (SWPP) for Sites 2 and 17.

#### **Review and Approval of the September 29, 2004 RAB Meeting Minutes**

Mr. Piszkin asked for any changes or comments prior to approval of the September 29, 2004 RAB meeting minutes. Bruce Christensen of Weston Solution, who made the Radiological Release Report presentation at the previous RAB meeting, provided Mr. Piszkin with suggestions for changes to the minutes. Mr. Piszkin said these changes are minor and do not change the meaning of information presented but provide technical clarification. He added that the RAB meeting minutes are not "final" until the RAB approves them. The changes are presented in the table below.

<b><i>Item No.</i></b>	<b><i>Page, paragraph, line</i></b>	<b><i>Suggested Change</i></b>	<b><i>Reason for Change</i></b>
1.	Page 7, 1st paragraph, 2nd line	Replace "two from off-Station and four from on-Station areas" with "two from areas north of Irvine Boulevard and four from areas south of Irvine Boulevard on-Station."	No background samples were collected from off-Station.
2.	Page 7, 4th paragraph, 1st line	Replace "100 feet by 190 feet." with "100 square feet."	To be factual and for consistency with Page 9, last paragraph, 4th line.
3.	Page 9, Discussion, 1st paragraph, 1st line	Replace "using the supplemental Radiological Release Report for Sites 2 and 17, this" with "issuing the Radiological Release Report for Sites 2 and 17 as an appendix to the 90 Percent Remedial Design."	Current wording does not make sense.
4.	Page 10, 3rd paragraph, 4th line	Replace "sun, and the rest is from radioactive material present in concrete and soil." with "terrestrial sources (soils, rocks, radon gas, etc.) and the rest from the sun and man-made sources."	To be factual.

<i>Item No.</i>	<i>Page, paragraph, line</i>	<i>Suggested Change</i>	<i>Reason for Change</i>
5.	Page 10, 3rd paragraph, 5th line	Replace "radium, for example, bananas contain radium potassium." with "radioactivity, for example, bananas contain radioactive potassium."	To be factual.
6.	Page 10, 4th paragraph, 2nd line	Replace "a high-density scan" with "by using a high resolution germanium gamma spectrometer"	To be factual.

After presentation of the changes listed above, the RAB approved the amended minutes.

### **Announcements**

- Mr. Piszkin said the next meeting will be held January 26, 2005, and include elections for the Community Co-Chair position. An information sheet that explains the Co-Chair election process is available on the information table for interested RAB members.
- Mr. Piszkin introduced Mr. Rich Muza to the RAB as the new Project Manager representing the U.S. Environmental Protection Agency (U.S. EPA) to replace Ms. Nicole Moutoux.
- He noted that there has been a correction to the area code for John Broderick (Regional Water Quality Control Board) which recently changed to (951).

Mr. Piszkin provided a summary of the recent, ongoing environmental restoration activities at MCAS El Toro Installation Restoration Program sites.

- Irvine Desalter Project Update – Mr. Piszkin said that Steve Malloy, Irvine Ranch Water District (IRWD), provided a memo that summarizes the latest technical status of the project. It is available as a handout for those that are interested. He added that there have been some design changes and the Department of Justice, which represents the Marine Corps and the Navy on Settlement Agreement issues, has reviewed the adjustments for wells and the changes to the treatment system. This will ultimately result in an Explanation of Significant Differences (ESD) to the Record of Decision (ROD) which will formally document these changes. He added that the 100% design submittal plans for the Site 24 VOC Source Area will be ready for review later this month (December 2004) and that the 90% design submittal for the Site 18 Volatile Organic Compound (VOC) groundwater plume, will be issued in January 2005. Construction of the remedy is scheduled to start next summer.
- Site 1, Explosives Ordnance Disposal (EOD) Range – The Navy is currently waiting for U.S. Fish and Wildlife Service (USFWS) approval to sample at the bermed area known as the ephemeral pond. The Remedial Investigation (RI) report is scheduled to be issued to the regulatory agencies in spring 2005. Site 1 is the last MCAS El Toro Installation Restoration Program site that will require completion of the Record of Decision process and remedial actions.
- Sites 2 and 17, Magazine Road and Communication Station Landfills – A test pad will be constructed for the landfill cap with which is expected to start in early 2005.
- Sites 3 and 5, Original and Perimeter Road Landfills and Anomaly Area 3 – A Draft Feasibility Study (FS) Addendum will be completed in February 2005. These activities were on hold until completion of the Radiological Survey. This FS Addendum will be



followed by a new Proposed Plan in April/May 2005, a public comment period, and the ROD will follow. He said that the ROD will not differ much from the draft that was previously prepared. The proposed remedy is still a landfill cap with a plastic liner. The Navy is looking to add some new information to the ROD. The anticipated remedy will now include a monitoring and capture network for soil gas migration. A passive system would be included along with an active piping system as part of the cap in case there is gas generation. Including this in the remedy will avoid the need to retro fit the landfill cap later.

- Site 16, Crash Crew Pit No. 2 (Fire Fighting Pit) – Groundwater in support of the Monitored Natural Attenuation (MNA) remedy, is scheduled to start in March 2005.
- Site 8 and 12, Defense Reutilization and Marketing Office (DRMO) – Activities at these sites were stopped at the Draft ROD stage until the Radiological Survey and the subsequent Radiological Release Report were completed. A Proposed Plan was done in the late 1990s and the remediation proposed was dig and haul of the soil. The cleanup action has not changed but a new Proposed Plan may be prepared that covers the radiological aspects at these sites. The cleanup action would remain the same (dig and haul).
- Site 11, Transformer Storage Area – Field work is anticipated to begin in July 2005 and little excavation is needed. The draft closure report will be prepared in 2006.
- Locations of Concern (LOCs) – At MCAS El Toro as of 11/1/04 there are 1,032 LOCs. Of those, 846 are NFA sites. Most of the NFAs (98%) were obtained without any cleanup actions taken because conduction of sampling, analysis, and evaluation determined that no other actions were necessary to close out these LOCs. There are 21 NFA recommendations currently being evaluated. There are 165 LOCs in progress. Last year, 42 NFAs were approved by the regulatory agencies.

#### **RAB Subcommittee Meeting Report, Ms. Marcia Rudolph, RAB Subcommittee Chair**

Ms. Rudolph reviewed the key points discussed in the RAB Subcommittee meeting:

- The RAB Subcommittee would like to have another base tour after the test pad for Sites 2 and 17 landfills has been installed.
- The RAB Subcommittee would like to have “mini-report updates” for Sites 3 and 5 at an upcoming RAB meeting.
- Perchlorate at Site 1 is still a key interest of the RAB Subcommittee.
- There are concerns regarding the public disclosure of radionuclide issues, particularly since a stand-alone document was not issued in regard to Sites 2 and 17. This information was contained in the appendices to the Sites 2 and 17 landfill design documentation. She said that from a public relations standpoint, the general public can become quite concerned with “nuclear stuff.” She suggested that information pertaining to radiological issues be presented in a stand-alone document or compilation summary document with an executive summary that cover all the sites that dealt with nuclear materials, and it should be very specific and detailed. The

RAB Subcommittee thought this would be a good source for the public to reference and they are encouraging the Navy to get more information out to the public.

#### **Navy Responses to Subcommittee Comments**

- Mr. Piszkin followed up on an issue from the last RAB meeting. He had said there was a "bidder alert" which was sent to the El Toro bidder Support Office and also sent out to potential bidders of former MCAS El Toro property. The Navy completed its response to the bidder alert and it was submitted and placed on the Heritage Fields website. The El Toro bidder Support Office has been open for over a year to help support the needs of current bidders of MCAS El Toro property.
- Mr. Piszkin said that next year is a banner year for MCAS El Toro and there will be numerous opportunities for site tours for RAB members to observe all of the MCAS El Toro accomplishments. For example, remedial actions will be underway at Sites 8 and 12, excavations at Site 11, landfill caps will be installed at Sites 2 and 17, and the construction of the electrical infrastructure, pipelines and wells for the VOC Source Area groundwater cleanup will be conducted. He added that there will also be soil vapor extraction projects conducted for some of the Compliance program sites.
- Mr. Piszkin acknowledged that Ms. Rudolph made a good comment on the radionuclides issue, and that an index or bibliography of where radiological documents and information pertaining to MCAS El Toro sites may be helpful. He clarified that when it comes to persons bidding on the parcels there are no radiological issues at this time. Also, the reason for the bidder support office is to provide support for bidders investigating the environmental cleanup. The office serves as the real estate agent to market the base and supply environmental backup. He added that the Updated Community Relations Plan might be able to incorporate more methods of finding information in the Informational Repository at the Heritage Regional Park Library.
- Mr. Piszkin recognized Ms. Nicole Moutoux, the U.S EPA representative for the past four years after starting in December 2000. She came on the project following Glenn Kistner who left to pursue an assignment in Washington, DC. He mentioned that her assignment to MCAS El Toro was originally going to be a 4-month temporary assignment but it turned into a 4-year commitment. Mr. Piszkin read out loud the letter of appreciation the RAB is sending to her. It focuses on thanking and congratulating her all the hard work and effort she made and her accomplishments relative to MCAS El Toro. Mr. Andy Piszkin, Mr. Bob Woodings, and Ms. Marcia Rudolph all signed the letter today. Mr. Piszkin called Ms. Moutoux via a cell phone-speakerphone and all the RAB members present at the meeting left a message of thanks in unison.

## **NEW BUSINESS**

### **◆ Regulatory Agency Comment Update**

#### **Frank Cheng, Project Manager, Cal/EPA Dept. of Toxic Substances Control (DTSC)**

Mr. Frank Cheng said since the last RAB meeting, DTSC had received and approved the extension request of the submittal for the Site 24 Final Remedial Design, the Site 18 Preliminary (90%) Remedial Design, and the Site 18 Final Remedial Design. Also, DTSC approved the Draft Final Remedial Action Work Plan for the Shallow Groundwater Unit at Site 24. The work plan covers the remedial action objectives, implementation, construction activities, and system operations. DTSC also concurred with response to comments on the Draft Site Assessment report on Site 16. The Navy proposed to extend the depth of soil vapor extraction to 140 feet deep.

Closure reports for temporary accumulation areas (TAAs), aerial photo anomalies (APHOs), and oil/water separators were reviewed. DTSC has concurred that no further action is necessary for TAAs 155A, 155C, 770; APHOs 96, 107, and 113; and underground storage tank 765A and oil/water separator 765B. TAA 155A and 155C were identified as Drum Storage Areas. TAA-770 was identified as a hazardous waste storage area that stored waste oil, hydraulic fuel and antifreeze. Soil samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons, pesticides, and metals and the results were below action levels. APHO 107 was identified as excavation fill area, no evidence of soil stains were observed and sample results were below action levels. APHOs 96 and 113 were identified as a possible stained area or "wet soil," based on record research and field inspections. Maintenance of the piping facility caused water releases that caused the image of stained or wet soil. Underground storage tank 765A and oil/water separator 765B were removed and confirmation soil samples were taken and the results were below action levels.

DTSC reviewed the Work Plan for TAAs 130-C, 771, and Miscellaneous Site of Concern (MSC) P1/Unit 2, a former pesticide storage area, were former hazardous waste storage areas where contaminated soils were identified in previous investigations. DTSC recommended the samples be taken by slide-hammer sampler and to analyze compounds for common fuel elements.

#### **Rich Muza, Project Manager, U.S. Environmental Protection Agency (U.S. EPA) Region IX**

Mr. Rich Muza introduced himself and said his background is in geology and more specifically groundwater hydrology. He has worked 17 years with the U.S. EPA starting in Atlanta, Georgia and most recently in Denver, Colorado. He said he moved to California in September 2004. He has been working with Ms. Moutoux during this transition time to catch up on all projects. He added that he does not have much to report today, since he is "getting up to speed." Since he has been on board, U.S. EPA also granted the extension request for Sites 18 and 24.

◆ **Long Term Aquifer Test at Installation Restoration Sites (IRP) Site 2, Gordon Brown, Navy RPM and Steve Williams, Earth Tech, Inc.**

Mr. Gordon Brown, Navy RPM, introduced the next presentation by giving background information on IRP Site 2 Magazine Road Landfill. He said that municipal landfills of this type are typically addressed with U.S. EPA's presumptive remedy approach. The presumptive remedy has a prescriptive landfill cap that controls leakage of rain and surface water into the landfill mass. Mr. Brown said that the landfill cap remedy will also include consolidation of materials from Areas C and D that are adjacent to the landfill. These materials will be excavated and placed onto the Site 2 landfill prior to construction of the cap.

Mr. Brown further explained that by minimizing any leaking of water from the surface into the landfill, this protects groundwater since it would control leaching of landfill materials that could enter into the groundwater. But in regards to Sites 2 and 17, use of the presumptive remedy did not dissolve the Navy from determining if the landfills previously contaminated groundwater. He added that the remedial investigation (RI) for the Site 2 landfill, and subsequent pre-design investigations, determined that industrial solvents TCE and PCE, and naturally occurring radionuclides and metals were present. For Site 2, with the Interim Record of Decision (ROD) for capping the landfill, it was understood that the groundwater would be further investigated to determine the best alternative for addressing contamination in groundwater. The geology specific to this area is quite complex.

Mr. Brown said that Mr. Crispin Wanyoike, Earth Tech, Inc., had requested if Mr. Steve Williams of Earth Tech, Inc., could do his Masters Thesis on the hydrogeology at Site 2. The Navy determined that the project could benefit from this extra effort and intense scrutiny provided by Mr. Williams on this issue. Mr. Brown introduced Mr. Williams.

Mr. Williams began his presentation by discussing the previous environmental investigations that were conducted at Site 2.

- Phase I Remedial Investigation (RI), conducted in 1993, identified chemicals of potential concern (COPCs) based upon the analysis of surface water, sediment, shallow soil, subsurface soil and groundwater samples.
- Phase II RI, conducted in 1996, collected groundwater samples that contained the volatile organic compounds (VOCs) specifically TCE and PCE, several metals, and gross alpha-emitting isotopes. Also, a short-term aquifer test was conducted that indicated significant variances in the hydraulic properties of the groundwater system and uncertainty with regards to the landfill boundary at Site 2.
- The Feasibility Study (FS), conducted in 1997, initially examined potential remedial alternatives and narrowed the alternatives down. Alternatives retained for extensive evaluation were: no action, compliance monitoring and reporting, deed restrictions, and natural attenuation. Potential substitutes or support technologies include Resource Conservation and Recovery Act (RCRA)-type cap, groundwater extraction and treatment, and dual-phase extraction.

- In 2000, a subsequent investigation was conducted to verify VOCs previously detected in groundwater. This investigation confirmed the presence of TCE and PCE in excess of the maximum contaminant level, a drinking water standard. The presence of a TCE daughter product suggested that TCE is degrading via natural attenuation. Radionuclides were detected and a supplemental investigation concluded that they were naturally occurring. Perchlorate was not detected at that time. Additional evaluation of natural attenuation and perchlorate were recommended.

Mr. Williams said there were 18 abandoned wells to facilitate waste consolidation into operational landfill areas. As said in the Draft Final Remedial Design, up to 11 wells may be replaced, and these wells will provide adequate coverage to monitor the distribution of the VOCs and perchlorate.

Mr. Williams explained that the Long-Term Aquifer test was conducted in three phases.

- Phase I – installation of 14 piezometers and baseline groundwater sampling was conducted to assess the vertical and lateral extent of TCE and PCE. Two rounds of sampling were conducted to further assess the extent of perchlorate and 1,2,3-TCP, another VOC. Data was also collected to further assess natural attenuation potential for TCE and PCE.
- Phase II – installation of a groundwater extraction system and groundwater treatment system. Step draw-down tests and long-term aquifer testing using five wells was conducted. Sustainable pumping rates and mass removal rates within the two areas or plumes containing TCE and PCE areas were assessed. Aquifer responses induced by groundwater extraction and precipitation were evaluated. Aquifer parameters were quantified. Post-aquifer test groundwater samples were collected.
- Phase III – installation of two downgradient, off-Station continuous core wells to assess the extent of VOCs and perchlorate in groundwater.

Mr. Williams showed a series of simplified diagrams of a long-term aquifer test. Key components of the test include the step draw-down test and the extraction test. During the step-draw down test, water is pumped out from the wells and it removes the water around the well creating a cone of depression. Observations wells are used to evaluate the “curves” in the area of influence of the extraction well. For the test six wells were used, three in the PCE area and three in the TCE area. One well at each area is used to establish and evaluate sustainable long term pumping rate of the well. Of the six wells, four had extremely low rates, .5 to 1.5 gallons per minute (gpm) and well 02NEW8 had highest pumping rate.

Once the long term pumping rates have been established, the wells have to “recover” after which the extraction tests can be done. The curves are observed from the pumping and the “boundary effect” of each well is also observed. Evaluation of the curves and the boundaries from the extraction/pumping wells and the observation wells during the step-draw down test, long-term aquifer test, and the recovery test provides the information needed to calculate parameters of the aquifer. The parameters are: transmissivity, hydraulic conductivity, and storativity.

- Transmissivity is the transmission capability of the entire thickness of an aquifer.
- Hydraulic Conductivity is the amount of groundwater flowing through a unit cube of the aquifer.
- Storativity is the volume of water that an aquifer releases from or takes into storage per unit surface area of the aquifer when the head is lowered a unit distance.

The estimated values of transmissivity at Site 2 ranged between 3.0 ft<sup>2</sup>/day and 4,400 ft<sup>2</sup>/day. The estimated values of storativity at Site 2 ranged from 3.5x10<sup>-5</sup> to 0.089. Mass removal rates of TCE, PCE, 1,2,3-TCP, and perchlorate were estimated using the concentrations detected of these chemical constituents and pumping rate data from each test. A total of 2,553,984 gallons of groundwater was pumped and treated. This resulted in the following removal rates: TCE 0.16 pound (lb), PCE 0.072 lb, 0.00072 lb 1,2,3-TCP and perchlorate 0.11 lb.

Mr. Williams explained the findings and conclusions of the geology and hydrogeology. Site 2 geology consists of alluvium to about 40 feet bgs adjacent to Magazine Road which increases to at least 90 feet bgs east of Borrego Canyon Wash. The bedrock beneath the alluvium consists of heterogeneous sandstone and siltstones. The long-term aquifer test identified different types of hydraulic barriers:

- A barrier at the southern end of Santa Ana Foothills
- A barrier at the center of the site separating PCE and TCE plumes
- A barrier that vertically separates upper and lower areas of the site from impacting groundwater.

During the long-term aquifer test, 8 months of continuous monitoring was conducted to collect data. Precipitation and recharge of the aquifer was recorded in real-time across the site during the long-term aquifer test. Precipitation provided a different method of inducing stress within the aquifer system that could not be stimulated or induced artificially. Significant recharge occurs where the TCE and PCE plumes are located. The precipitation induced recharge showed that there were varying responses to precipitation events, thereby providing data on the presence of different hydrogeologic zones and barriers. Also, recharge appears to be from the subsurface. Precipitation data, recharge data, and test data showed activity that is not normally seen. Mr. Williams showed the site-specific extraction/recharge computer animation to help illustrate this process.

Based on data collected and the evaluation conducted, 12 hydrogeologic zones were identified, 9 are shallow and 3 are deep. The hydrogeologic zones are based on static water levels, calculated transmissivity and other hydrogeologic parameters, response to pumping, and precipitation-induced recharge. It was demonstrated that within the same aquifer system, there are different hydrogeologic characteristics. The hydrogeologic zones may be separated or partially separated from each other by hydraulic barriers and/or changes in lithology.

The potential for natural attenuation was also evaluated. Dissolved oxygen (DO) and oxidation-reduction potential (ORP) monitoring was done in 23 wells with down-hole measurements and flow-through measurements. Natural attenuation scoring using U.S. EPA protocol was done in both the TCE and PCE areas. The scoring range of 2 to 4 on U.S. EPA's scale indicates inadequate evidence for anaerobic biodegradation of chlorinated solvents. However, there is evidence of daughter products of TCE and data revealed that natural attenuation is occurring to some extent within the TCE plume.

The long-term aquifer test provided data to further delineate the VOC plumes at Site 2. Specifically, the data revealed the following:

- PCE was and was found in two small distinct plumes with concentration slightly above the MCL.
- TCE was also laterally and vertically delineated but it was not detected above the MCL off-Station.
- 1,2,3-TCP was detected in the center of the TCE plume and is associated with high concentrations of TCE and was delineated above the reporting limits of 0.5 micrograms per liter( $\mu\text{g/L}$ ).
- 1,4-Dioxane was not detected above reporting limits at any time prior to, during or after the aquifer test.

The perchlorate plume delineation shows a downgradient and cross-gradient extent above the Public Health Goal of 6  $\mu\text{g/L}$ . The maximum concentration detected was 20.7  $\mu\text{g/L}$  but there was no apparent correlation between the VOC and perchlorate plumes. Perchlorate was not detected above the public health goal off-Station.

Mr. Williams briefly reviewed the remaining steps in the schedule for groundwater at Site 2:

- Draft Technical memorandum - November 30, 2004
- Final Technical memorandum - March 3, 2005
- ARAR Request Letter - December 10, 2004
- Draft Feasibility Study Addendum - March 7, 2005
- Final Feasibility Study Addendum - June 28, 2005
- Proposed Plan - August 26, 2005
- Draft Record of Decision - November 7, 2005

### Discussion

Mr. Roy Herndon, RAB member representing the Orange County Water District, asked if extraction will be used as part of the remedy. Mr. Williams said the highest concentration area is very low and groundwater extraction would not be cost effective. It is possible that monitored natural attenuation could be applied along with addressing the hot spots. He added that the TCE plume is not moving and the concentrations have been relatively stable over time.

Dr. Michael Brown, consultant to the City of Irvine, asked if the Area C2 is removed and consolidated in the landfill, is this expected to have an impact on detections, and would such detections of contaminants be from a source area or from the landfill? Mr. Ray Ouellette, RAB meeting attendee, clarified this question asking, if there is a connection between waste to be removed and contamination in the groundwater. Mr. Gordon Brown said that the Navy had questions if the landfill is the source of the TCE as well. He added that the PCE plume is confined. The Navy believes there was promiscuous dumping in the area and that it is not a leak from the landfill because there has been very little growth in the plumes. The Navy is considering doing a microcosm study on this in order to confirm this. He added that pump and treat will not be an option for groundwater cleanup.

Another question was raised about the perchlorate. Mr. Brown said the highest detection was 20 µg/L in an area that is upgradient of Site 2.

Mr. Brown said that in the course of the consolidation effort, will there be a change in the work plan if there is a discovery of drums, residues, or anything hazardous, and will it be treated as such and be handled properly and disposed of. Mr. Brown said the Navy will not put hazardous materials into the landfills. It is proposed that the Navy trace any refuse in the C1 and C2 areas to 1 foot below the invert and employ a composite sampling regime to determine if there is any remaining contamination. If the sample results reveal detections, the Navy will expedite changes based on the contamination, and discuss institutional controls with the BCT. If there are no contaminants are found then the Navy will not put institutional controls in place.

Mr. Ouellette asked if the Navy was going to go follow South Coast Air Quality Management District Rule 1166 for materials removal and consolidation. Mr. Wanyoike said that rule is for VOC-contaminated soil, which this is not, so compliance will follow Rule 1150.

Ms. Rudolph asked Mr. Williams about the two pockets encapsulated by faults that are blocking migration of contaminated groundwater downgradient. Mr. Williams said they looked at hydraulic barriers below the alluvium and that the bedrock is 20 million years old.

Ms. Rudolph asked if seismic activity would compromise any of the wells used for the Site 2 investigation. Mr. Brown said the Navy has decommissioned a number of wells and upcoming documentation will show new wells after consolidation of materials under the landfill cap. Monitoring will continue and wells will be monitored on a quarterly basis the first year and on a twice-yearly basis during the second, third and fourth years of monitoring.

Mr. Bill Sedlak, RAB meeting attendee, asked Mr. Williams about the hydrogeologic barriers in the fault zones. Mr. Williams said recharge was as fast if not faster in the deep wells below a hydrogeologic barrier than the wells above, and recharge was not detected in the alluvium and fill.

♦ **Storm Water Pollution Prevention (SWPP) at IRP Sites 2 and 17, Mr. Gordon Brown, Remedial Project Manager, Navy**

Mr. Brown, Navy RPM, talked about the Best Management Practices (BMPs) taken to prevent storm water from impacting the watershed and to prevent migration of potentially silt-laden storm water from the landfill laydown areas from entering the Borrego Canyon Wash. These activities are called Storm Water Pollution Prevention (SWPP) and actions taken use the BMPs available. The two major objectives of SWPP are: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm discharges, and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges. He presented a series of photos that showed the RAB all the BMPs implemented at Sites 2 and 17 for SWPP purposes.

Mr. Brown said BMPs were implemented in the area where the Navy's contractor, ERRG, blended and stockpiled soil. The "stockpile" is actually a 5 acre flat area northeast of Site 2 and about a 3



acre area northwest of Site 17. A mini cross-section of the cap profile was also constructed in the laydown area to determine if it would make for a viable landfill cap for Sites 2 and 17 and meet the requirements of the Record of Decision. A clay and sand mixture (artificial soil) was prepared; however, it ended up resembling kitty litter with lumps of clay in the sand, which is problematic. Ultimately, an asphalt reclaimer of the same vintage seen at highway construction sites was used for blending the clay and sand. When it was later realized the landfill cap design document using the tested mixed-soil would not be approved, the Navy made the decision to be a good steward and elected to comply with SWPP regulations even though they were not required.

The applicable regulations and laws, specifically the State's National Pollution Discharge Elimination System Permit, required that soil and silt not interfere with storm water because of the potential pollution hazards and implementing BMPs specified in the Storm Water Management Plan developed for the soil-mixing activities was necessary to ensure proper compliance. The Navy and ERRG did not want the soil mixture to become saturated by rainfall and runoff so the soil was crowned and compacted to 90 percent. Trenches were then constructed around the perimeters of both lay down areas. Trenches conveyed water to an endpoint where berms, straw bales, and silt fencing, slowed down the water before it entered a catch basin at Site 2.

At Site 17, a catch basin was not constructed, as there was no waterway drainage. At site 2, there is a potential for the soil to go to the wash and thus it was necessary to slow down the flow and stop sediment from being introduced into the waterway. There was a lot of runoff from the October 2004 rains, which compromised the straw bails and the silt fence so they displaced the bails and also put in "furrows" into the crowned compacted area.

Mr. Brown reported that the sediments did not make it into the wash, but the weather has been more intense than was expected, so they plowed furrows perpendicular to the runoff gradient to remedy this. The Navy is working with the contractor to make sure they are ready for soil that could potentially wash down from the nearby hills.

Mr. Brown said that the BMPs are routinely inspected following each storm event and then maintenance is performed, as needed. Soils excavated out of the catch basin were placed back on the soil pile or used in the berm. He added that the rip/rap in the wash is holding up quite well; it is designed for a 100-year storm event.

Ms. Rudolph asked if it was a 50- or 100-year rain event that occurred in October 2004.

Mr. Wanyoike said that the gauges collected 3.5 inches of rain. The timeframe for the 3.5 inches rain was not known. For a 25 year storm, 6 inches of rain in a 24-hour period is required so it was roughly a 10-year storm based on a 24-hour period approximation. Mr. Brown added that for every rain event, the contractor is obligated to look at the site and provide reports. The Resident Officer in Charge of Construction (ROICC) at the base also monitors rainfall and there is an inspection process in place per the law. He reiterated that the major the Sites 2 and 17 major lay down areas are monitored which includes inspections of the straw bails, silt fence, and catch basin. Mr. Wanyoike added that the three catch basins are inspected to prevent sediment from going into the wash. Mr. Brown said Site 17 is landlocked and the water has no place to go.

Mr. Rudolph said in the future she would like to see more on how the Navy is protecting the sites based on regulations and this includes more on catching runoff at other sites at the Station,

particularly landfill Sites 3 and 5 and Anomaly Area 3.

Mr. Brown briefly discussed the test pad that will be constructed to demonstrate that the landfill caps are viable and that the right mixture of soil to meet the permeability requirements called for in the ROD. The test pad will be constructed in spring 2005 and be tested for a 2-week period. The regulatory agencies will have 100 percent oversight during construction of the 40-foot by 100-foot pad.

#### ♦ Open Q & A -- Environmental Topics

Mr. Piszkin opened the floor to any questions. He also mentioned the perchlorate fact sheet, discussed at the September 29, 2004 RAB meeting, that was developed by the Navy with BCT input and oversight was placed on the Heritage Fields website. He added that the Navy only has to notify the agencies or property users if perchlorate is detected at 6 parts per billion (ppb) or greater. If perchlorate is detected at 10 times that amount at 60 ppb, a notification needs to be made that recommends that affected water should not be used as a drinking water source and such a drinking water source be removed from the drinking water system. This guidance comes from the State of California, Department of Health Services (DHS) and becomes effective on January 1, 2005. He added that the U.S. EPA does not have an established MCL for perchlorate and what are available right now are guidance levels. Also, the U.S. EPA and DHS websites have additional on this issue and both agencies are looking to develop an MCL for perchlorate.

### **MEETING EVALUATION AND FUTURE TOPICS**

**Suggestions for future presentation topics include:**

- Anomaly Area 3 Update

#### **Upcoming RAB Meeting, and Subcommittee Meeting**

The next RAB meeting will be held from 6:30 to 9 p.m., January 26, 2005, in the regular meeting location, Irvine City Hall, Conference and Training Center (CTC), One Civic Center Plaza, Irvine. A RAB Subcommittee meeting will be held from 5 to 6 p.m., the same evening in Room L-104 at Irvine City Hall.

#### **Recent RAB Subcommittee Meetings**

The most recent RAB Subcommittee meeting was held December 1, 2004, in Room L-104, Irvine City Hall, before tonight's RAB meeting.

#### **RAB Meeting Adjournment – December 1, 2004 Meeting**

The 72<sup>nd</sup> meeting of the MCAS El Toro Restoration Advisory Board was adjourned at 9:07 p.m.

**12/1/04 RAB Meeting Attendance:**

<u>TOTAL PEOPLE IN ATTENDANCE</u>	<u>TOTAL PEOPLE ON SIGN-IN SHEET</u>	<u>TOTAL RAB MEMBERS PRESENT</u>	<u>TOTAL RAB AGENCY MEMBERS PRESENT</u>	<u>TOTAL RAB COMMUNITY MEMBERS PRESENT</u>	<u>TOTAL EXCUSED ABSENCES RAB MEMBERS</u>	<u>EXCUSED ABSENCES – AGENCY RAB/ COMMUNITY RAB</u>
21	17	7	4	3	1	1/1

**RAB and Subcommittee Meeting Schedule (January 2005 – July 2005)**

<b>RAB and Subcommittee Meeting Dates</b>	<b>RAB Meeting Conference and Training Center (CTC) 6:30 – 9:00 p.m.</b>	<b>Subcommittee Meeting Room L-104 5:00 – 6:00 p.m.</b>
Wed., January 26, 2005	CTC	Room L-104
Wed., March 30, 2005	CTC	Room L-104
Wed., May 25, 2005	CTC	Room L-104
Wed., July 27, 2005	CTC	Room L-104

Additional Date Reserved: Wed., April 27, 2005

**Materials/Handouts Include:**

- \*RAB Meeting Agenda/Public Notice – 12/1/04 RAB meeting – 72<sup>nd</sup> meeting.
- \*Meeting Minutes from the September 29, 2004 RAB meeting – 71<sup>st</sup> Meeting.
- RAB Meeting Minutes Changes/Corrections from 9/29/04, Suggested by Bruce Christensen, Radiological Release Reports Presentation.
- Proposed RAB Community Co-Chair Election Process for RAB Meeting January 26, 2005.
- MCAS El Toro RAB Meeting Schedule, Full RAB and RAB Subcommittee (July 2004-July 2005).
- MCAS El Toro RAB Mission Statement and Operating Procedures.
- RAB Membership Application – MCAS El Toro RAB.
- MCAS El Toro RAB Membership Roster (revised July 2004).
- MCAS El Toro Installation Restoration Program – Mailing List Coupon.
- MCAS El Toro – BRAC Cleanup Team Members and Key Project Representatives and Administrative Record File and Information Repository Locations and Contacts.
- MCAS El Toro Installation Program Site Location Map
- Internet Access – Environmental Web Sites.
- Internet Access – U.S. EPA Federal Register Environmental Documents – Endangered and Threatened Wildlife and Plants Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp.
- One-Page Glossary of Technical Terms.
- Department of Navy – Policy for Conducting Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Statutory Five-Year Reviews, November 2001.
- Department of Navy – Policy for Optimizing Remedial and Removal Actions Under the Environmental Restoration Programs, April 2004.
- Department of Defense – Institutional Controls, spring 1997.

- Department of Defense – A Guide to Establishing Institutional Controls at Closing Military Installations, February 1998.
  - Department of Defense – Memorandum - Responsibility for Additional Environmental Cleanup after Transfer of Real Property, 1997.
  - U.S. EPA Fact Sheet – A Citizen’s Guide to Natural Attenuation, October 1996.
  - Brochure – Commonly Asked Questions Regarding the Use of Natural Attenuation for Chlorinated Solvent Spills at Federal Facilities (Brochure developed through a partnership of U.S. EPA, Air Force, Army, Navy, and Coast Guard).
  - U.S. EPA Fact Sheet – Checking Up on Superfund Sites: The Five-Year Review, June 2001.
  - U.S. EPA Fact Sheet – Perchlorate Update, March 2002.
  - Environmental Data Quality Handout – Response to RAB Inquiry, September 2003.
  - News Article from the *New York Times* News Service – “Toxic agents are not always a hazard” by Jane E. Brody, dated July 21, 2004.
  - *Presentation*- Long Term Aquifer Test IRP Site 2, presented by Gordon Brown, Remedial Project Manager, and Steve Williams, Earth Tech, Inc., at the December 1, 2004 Restoration Advisory Board Meeting for Former MCAS El Toro.
  - *Presentation* – Storm Water Pollution Prevention (SWPP) IRP Sites 2 and 17, presented by Gordon Brown, Remedial Project Manager, at the December 1, 2004 Restoration Advisory Board Meeting for Former MCAS El Toro.
- \* Mailed to all RAB meeting mailer recipients on 11-19-04.

#### **Agency Comments and Letters - U.S. Environmental Protection Agency (U.S. EPA)**

- No Items Submitted

#### **Agency Comments and Letters – California Environmental Protection Agency (Cal-EPA)**

- Cal-EPA, Department of Toxic Substances Control (DTSC) – Approval of Closure Report for Underground Storage Tank (UST) 765A and Oil Water Separator (OWS) 765B, Former MCAS El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 7, 2004).
- Cal-EPA, DTSC – Approval of Addendum to Closure Report for Temporary Accumulation Area (TAA) 770, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 8, 2004).
- Cal-EPA, DTSC – Summary Report for Aerial Photography Anomaly (APHO) 107, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 12, 2004).
- Cal-EPA, DTSC – Response to Comments on Draft Site Assessment Report for IRP Site 16, Crash Crew Pit Number 2, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 14, 2004).
- Cal-EPA, DTSC – Approval of Technical Memorandum for Temporary Accumulation Area (TAA) 155A and 155C, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 15, 2004).
- Cal-EPA, DTSC Approval of Draft Final Remedial Action Work Plan, Shallow Groundwater Unit Remedial Action, IRP Site 24, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 15, 2004).
- Cal-EPA, DTSC – Approval Federal Facility Agreement (FFA) Extension Request, Operable Unit (OU)-1 and OU-2A, Installation Restoration Program (IRP) Sites 18 and 24, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 22, 2004).
- Cal-EPA, DTSC – Summary Report for Aerial Photograph Anomaly (APHO) 96, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated October 22, 2004).

- Cal-EPA, DTSC – Comments on Site Assessment Work Plan for Temporary Accumulation Areas (TAAs) 130C, 771, and Former Storage Area Miscellaneous Sites of Concern (MSC) P1/Unit 2, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated November 2, 2004).
- Cal-EPA, DTSC – Summary Report for Aerial Photograph Anomaly (APHO) 113, Former Marine Corps Air Station (MCAS) El Toro – To: F. Andrew Piszkin, BEC, MCAS El Toro; From: Tayseer Mahmoud, Remedial Project Manager, DTSC (letter dated November 8, 2004).

### **California Regional Water Quality Control Board (RWQCB), Santa Ana Region**

- No Items Submitted

### **RAB Subcommittee Handouts and Letters** *(generally provided by Marcia Rudolph, MCAS El Toro RAB Subcommittee Chair)*

- No Items Submitted

### **Additional Information Submitted – 7/28/04 RAB Meeting**

- No Items Submitted

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*Copies of all past RAB meeting minutes and handouts are available at the MCAS El Toro Information Repository, located at the Heritage Park Regional Library in Irvine. The address is 14361 Yale Avenue, Irvine; the telephone number is (949) 551-7151. Library hours are Monday through Thursday, 10 am to 9 p.m.; Friday and Saturday, 10 am to 5 p.m.; Sunday 12 p.m. to 5 p.m.*

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### **Internet Sites**

#### *Navy and Marine Corps Internet Access*

*Naval Facilities Engineering Command, Southwest Division, Environmental Web Sites  
(includes RAB meeting minutes):*

[www.efdswn.navy.mil/environmental/envhome.htm](http://www.efdswn.navy.mil/environmental/envhome.htm)

[www.efdswn.navy.mil/environmental/ElToro.htm](http://www.efdswn.navy.mil/environmental/ElToro.htm)

#### *Department of Defense – Environmental Cleanup Home Page Web Site:*

<http://www.dtic.mil/envirodod/>

#### **U.S. EPA:**

[www.epa.gov](http://www.epa.gov) (this is the homepage)

[www.epa.gov/superfund](http://www.epa.gov/superfund) (site for Superfund)

[www.epa.gov/ncea](http://www.epa.gov/ncea) (site for National Center for Environmental Assessment)

[www.epa.gov/federalregister](http://www.epa.gov/federalregister) (site for Federal Register Environmental Documents)

[www.epa.gov/fedrgstr/EPA-IMPACT/2004/April/Day-27/i9203.htm](http://www.epa.gov/fedrgstr/EPA-IMPACT/2004/April/Day-27/i9203.htm) (site for Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Riverside fairy shrimp)

#### **Cal/EPA:**

[www.calepa.ca.gov](http://www.calepa.ca.gov) (this is the homepage)

[www.dtsc.ca.gov](http://www.dtsc.ca.gov) (site for Department of Toxic Substances Control)

[www.swrcb.ca.gov/](http://www.swrcb.ca.gov/) (site for Santa Ana Regional Water Quality Control Board)

*Meeting Minutes 12/1/04 MCAS El Toro RAB Meeting*

**MCAS EL TORO**  
**RESTORATION ADVISORY BOARD MEETING**  
**December 1, 2004**

***RAB MEMBER SIGN-IN SHEET***

Name	Signature	Name	Signature
Bell, Richard		Matheis, Mary Aileen	
Broderick, John	EAB	Meier, Fred J.	<i>Fred J. Meier</i>
Crompton, Chris		Muza, Rich	<i>R. Muza</i>
Herndon, Roy	<i>Roy Herndon</i>	Piszkin, Andy – Co-Chair	<i>AP</i>
Hersh, Peter	<i>Peter Hersh</i>	Reavis, Gail	
Hurley, Greg		Rudolph, Marcia	<i>YKR</i>
Jung, Dan		Sharp, Steven	
Mahmoud, Tayseer	<i>Alternate * present</i>	Werner, Jerry	
Malloy, Steve		Woodings, Bob – Co-Chair	EAB
Marquis, Roland		Zweifel, Donald E.	
Marquis, Suzanne			

EAB = Excused Absence

*\* Alternate Frank Cheng, DTSC*

New Attendees  
will be added  
to the MCAS  
El Toro  
Mailing List.

# MCAS EL TORO RESTORATION ADVISORY BOARD MEETING December 1, 2004

## NON-RAB MEMBER SIGN-IN SHEET

Other Attendees, Guests

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
Dhananjay Rawal	ECS Inc.	1651 East Edinger Ave Suite 101 Santa Ana, CA 92705	714-972-9990 714-972-9991	N
Steve Williams	EarthTech	7548 Twinning Trail Orange CA 92864	562-951-2272	N
Julie Diebenow	AG	777 South Figueroa 18th Floor Los Angeles, 90017	213 689-3741	N
Jim & Sheri Morris				N
Ray Ouellette	Resident -			N
Frank Cheng	DTSC		714 484 5395	

New Attendees  
will be added  
to the MCAS  
El Toro  
Mailing List.

MCAS EL TORO  
RESTORATION ADVISORY BOARD MEETING  
December 1, 2004

**NON-RAB MEMBER SIGN-IN SHEET**

*Other Attendees, Guests*

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	COMPLETE MAILING ADDRESS [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
CRISPIN WANYOIKE	EARTH TECH	300 OCEANGATE SUITE 700 Long Beach CA 90802	562 951 2057	
Bill Sedlak	Kennedy Jacks			
Bob Coleman	Brown + Caldwell			
Katherine Lawry	Brown & Caldwell			



New Attendees  
will be added  
to the MCAS  
El Toro  
Mailing List.

MCAS EL TORO  
RESTORATION ADVISORY BOARD MEETING  
December 1, 2004

**NON-RAB MEMBER SIGN-IN SHEET**  
*Other Attendees, Guests*

NAME <u>PLEASE PRINT CLEARLY</u>	AFFILIATION	<u>COMPLETE MAILING ADDRESS</u> [STREET NUMBER, STREET NAME, CITY, STATE, ZIP CODE]	PHONE FAX	INTERESTED IN RAB MEMBERSHIP?
MICHAEL BROWN	CITY OF IRVINE			

**MCAS El Toro -- Meeting Schedule**  
**Restoration Advisory Board (RAB)**  
**Full RAB and RAB Subcommittee Meetings**

**July 2004 – July 2005**

**All RAB meetings are open to the public.**

**RAB Meetings:** The Conference and Training Center (CTC) at Irvine City Hall has been reserved for RAB meetings (full RAB) on the last Wednesday of the month, dates are listed below. **Time: 6:30 – 9:00 p.m.**

**RAB Subcommittee Meetings:** Subcommittee meetings are held on the *SAME DAY* as the full RAB meeting from 5 to 6:00 p.m. in a smaller room. Conference Room L-104, next to the Council Chambers has been reserved. **General Meeting Time: 5:00 – 6:00 p.m. (Room is available from 4:30 to 6:30 p.m.)**

<b>RAB and Subcommittee Meeting Dates</b>	<b>RAB Meeting Room – Conference and Training Center (CTC) 6:30 – 9:00 p.m.</b>	<b>Subcommittee Meeting Room – Room L-104 5:00 – 6:00 p.m.</b>
Wed, July 28, 2004	CTC	Room L-104
Wed., September 29, 2004	CTC	Room L-104
Wed., December 1, 2004*	CTC	Room L-104
Wed., January 26, 2005	CTC	Room L-104
Wed., March 30, 2005	CTC	Room L-104
Wed., May 25, 2005	CTC	Room L-104
Wed., July 27, 2005	CTC	Room L-104

**Additional Date Reserved:** Wed., April 27, 2005

\* Traditionally when Thanksgiving falls on the last week of November, the RAB meeting has been held the first week of December. (In Nov. 2004, the last Wednesday of the month is the day before Thanksgiving.)

## **Proposed RAB Community Co-Chair Election Process**

### **RAB Meeting - January 26, 2005**

<b><u>Steps</u></b>	<b><u>Actions</u></b>
1	Discuss need, per RAB Mission Statement and Operating Procedures, for RAB Community Co-Chair Election.
2	Role and responsibilities of RAB Community Co-Chair are presented. "Community" RAB members are identified
3	"Community" RAB members nominate Community Co-Chair candidates.
4	Nominees either accept or reject the nominations. List of candidates is determined.
5	Candidates are given a few minutes to present their qualifications and state why they want to serve as Community Co-Chair.
6	Hold election – "Community" RAB members vote, using paper ballots provided or by a show of hands. Paper ballots tabulated by third party. Announce winner as RAB Community Co-Chair for 2005.

In the event of a tie:

- Vote again until have a winner. If necessary, the runoff candidates could have an additional 1-2 minutes to speak again prior to the next round of voting.
- If no winner after two more votes – options:
  - (a) Vote again at next RAB meeting.
  - (b) The winners could both serve as Community Co-Chairs, alternating the Community Co-Chair responsibility for co-chairing RAB meetings with the RAB's Navy Co-Chair – or – have the RAB determine a suitable system for having two Community Co-Chairs, and add it to the Mission Statement and Operating Procedures.

**MARINE CORPS AIR STATION EL TORO**  
**Installation Restoration Program**  
**Restoration Advisory Board Mission Statement and Operating Procedures**

This "Marine Corps Air Station (MCAS) El Toro, Installation Restoration Program, Restoration Advisory Board (RAB), Mission Statement and Operating Procedures," replaces the Revised Version dated January 31, 1996. This revised document contains a new section on the RAB Subcommittee, which replaces the old section. The new section is based on modifications made and approved by a majority vote of the RAB members present at the April 21, 1999 RAB meeting with further refinements made at the May 26, 1999 RAB meeting. Modifications incorporated resulted in revising the subcommittee structure so there is now only one RAB subcommittee. (Note: the original Mission Statement document was dated and signed on February 28, 1995.)

The Restoration Advisory Board (RAB) mission statement and operating procedures, herein referred to as "the mission statement and operating procedures", is entered into by the following parties; U. S. Marine Corps (USMC); U. S. Environmental Protection Agency (USEPA), Region 9; California Department of Toxic Substances Control (DTSC), Region 4; and the RAB. Marine Corps Air Station (MCAS) El Toro has developed a Community Relations Plan (CRP) which outlines the community involvement program. The RAB supplements the community involvement effort. A copy of the CPP is available at the information repository located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714.

**I. Mission Statement of the RAB**

a. The mission of the RAB is to promote community awareness and obtain timely constructive community review and comment on proposed environmental restoration actions to accelerate the cleanup and property transfer of MCAS El Toro. The RAB serves as a forum for the presentation of comments and recommendations to USMC, Remedial Project Managers (RPMS) of USEPA, and DTSC.

**II. Basis and Authority for this Mission Statement and Operating Procedures**

a. This mission statement and these operating procedures are consistent with the Department of Defense (DoD), USEPA Restoration Advisory Board Implementation Guidelines of September 27, 1994, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986, particularly Sections 120 (a), 120 (f), 121 (f), and 10 U.S.C. 2705, enacted by Section 211 of SARA, and September 9, 1993, DoD policy letter entitled, "Fast Track Cleanup at Closing Installations".

### **III. Operating Procedures**

#### **A. Membership**

1. All RAB members must reside in or serve communities within Orange County.
2. Members shall serve without compensation. All expenses incidental to travel and review inputs shall be borne by the respective members or their organization.
3. If a member fails to attend two consecutive meetings without contacting the RAB, or at least one of the RAB co-chairs, or fulfill member responsibilities including involvement in a subcommittee, the RAB co-chairs may ask the member to resign.
4. Members unable to continue to fully participate shall submit their resignation in writing to either of the RAB co-chairs.
5. Total membership in the RAB shall not exceed 50 members.
6. Applications for RAB membership vacancies shall take place as such vacancies occur. Applications will be reviewed and approved by the Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), USEPA, and DTSC along with consultation with the RAB community co-chair. Candidates will be notified of their selection in a timely manner.
7. Each RAB community member is considered equal whatever their position in the community, and has equal rights and responsibilities.

#### **RAB Membership Responsibilities**

- a. Actively participate in a subcommittee and review, evaluate, and comment on technical documents and other material related to installation cleanup, all assigned tasks are to be completed within the designated deadline date.
- b. Attend all RAB meetings.
- c. Report to organized groups to which they may belong or represent, and to serve as a mediator for information to and from the community.
- d. Serve in a voluntary capacity.

#### **B. RAB Structure**

1. The RAB shall be co-chaired by the MCAS El Toro BEC, and a community co-chair member. The BEC shall preside over the orderly administration of membership business.

2. A community co-chair will be selected by a majority vote of the RAB community members in attendance. Elected officials and government agency staff members of any legally constituted MCAS El Toro reuse groups are excluded from holding the community co-chair position. The community co-chair will be selected annually on the anniversary of the effective date of the agreement.

### **Community Co-Chair Responsibilities**

- a. Assure those community issues and concerns related to the environmental restoration/cleanup program are brought to the table.
  - b. Assist the USMC in assuring that technical information is communicated in understandable terms.
  - c. Coordinate with the BEC to prepare and distribute an agenda prior to each RAB meeting, and for the review and distribution of meeting minutes.
  - d. Assist subcommittees in coordinating and establishing meeting times/locations.
  - e. The community co-chair may be replaced by a majority vote of the RAB community members present at the meeting in which a vote is undertaken.
3. The RAB shall meet quarterly. More frequent meetings may be held if deemed necessary by the RAB co-chairs. The BEC will facilitate in the arrangement of the meetings and notify members of the time and location.
4. Agenda items will be compiled by the RAB co-chairs. Suggested topics should be given to the BEC or community co-chair no later than two (2) weeks prior to the meeting. The BEC shall be responsible for providing written notification to all RAB members of the upcoming agenda and supporting documents, at least two (2) weeks prior to the date, time, and place of scheduled RAB meeting.
5. The BEC shall be responsible for recording and distribution of meeting minutes. Also, the BEC shall collect a written list of attendees at each meeting, which will be incorporated into the meeting minutes. For quarterly meetings, the minutes will be distributed 30 days prior to the following meeting. For more frequent meetings, the minutes will be distributed as soon as possible.
6. A copy of the RAB meeting minutes will be sent to all RAB members. Supporting documents will be available for public review in the information repository and other repositories as identified.
7. RAB members will be asked to review and comment on various environmental restoration documents. Written comments may be submitted individually by a member, or by the RAB as a whole. Written comments will be submitted to the community co-chair on the subject documents within the schedule as provided for regulatory agency comments. The community

co-chair will consolidate comments from RAB members and provide all comments received to the BEC. The BEC will ensure that a written response is provided to the RAB in a timely manner.

**RAB Subcommittee**

8. On April 21, 1999, the RAB concurred that only one subcommittee is necessary to provide a concentrated focus on environmental cleanup issues. Therefore, the existing relevant subcommittees envisioned in the original "Mission Statement and Operating Procedures" dated February 28, 1995, have been dissolved, and incorporated into one subcommittee.

a. Membership on the subcommittee will be comprised of volunteers from the RAB, or may be selected by the BEC and the community co-chair.

b. The regular bimonthly RAB subcommittee meeting will continue to be scheduled for the last Wednesday of the month alternating with the regular meeting of the full RAB held at Irvine City Hall, Conference and Training Center, Irvine, California.

c. The subcommittee will set their own agendas and meetings and will be open to the public. The subcommittee chair will notify the BEC and community co-chair of all meeting times and places including additional subcommittee meetings other than the regularly scheduled bimonthly subcommittee meeting.

d. The subcommittee will elect a chair. The subcommittee membership may dismiss a subcommittee chair by a majority vote. Subcommittee chair removal is determined at the meeting where removal is addressed by majority vote of the RAB members present.

e. Membership on the subcommittee will include the RAB community co-chair.

f. Subcommittee status will be reviewed annually, in May, to determine if changes are needed or the continued existence is required.

g. The RAB subcommittee may establish ad hoc subcommittees for specific issues and purposes that would focus efforts on a short-term basis.

h. The subcommittee may request the participation, involvement, and advice of regulatory agency members.

9. MCAS El Toro has established an information repository for public documents relating to restoration activities at MCAS El Toro. The repository is located at the Heritage Park Regional Library, 14361 Yale Avenue, Irvine, CA 92714. RAB members, as well as the general public, are authorized access to any documents, studies or information, which have been placed in the repository or distributed at RAB meetings. The community co-chair will be provided one (1) copy of all draft documents. The subcommittee will be provided up to seven (7) copies of draft documents.

**IV. Effective Date and Amendments**

a. The effective date of this mission statement and operating procedures shall be the date that the last signatory signs this mission statement and operating procedures.

b. This mission statement and operating procedures may be amended by a majority vote of the RAB members present. Amendments must be consistent with the MCAS El Toro Federal Facility Agreement (FFA), and the statutes stated in Part 11 of the mission statement and operating procedures, (Basis and Authority for this Mission Statement and Operating Procedures).

**V. Terms and Conditions**

a. The terms and conditions of this RAB mission statement and operating procedures, and DONs endorsement thereof, shall not be construed to create any legally enforceable rights, claims or remedies against DON or commitments or obligations on the part of DON, and shall be construed in a manner that is consistent with CERCLA, 10 U.S.C. Section 2705, and 40 CFR Part 300.

**VI. Termination**

a. This mission statement and operating procedures will be terminated upon completion of requirements as stated in the FFA. However, after implementation of the final remedial design, it may be terminated earlier upon a majority vote of the RAB membership.

**VII. Signatories to the Membership Mission Statement and Operating Procedures**

IN WITNESS WHEREOF, we have set our hand this \_\_\_\_\_ day of \_\_\_\_\_ 1995.

\_\_\_\_\_  
MCAS El Toro BRAC Environmental Coordinator

\_\_\_\_\_  
RAB Community Co-Chair

\_\_\_\_\_  
U. S. Environmental Protection Agency RPM



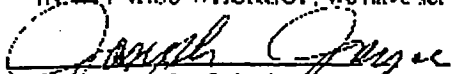
California Department of Toxic Substances Control RPM

The original "Mission Statement and Operating Procedures", dated February 28, 1995, is on file at Marine Corps Air Station (MCAS) El Toro, Environment and Safety. It was signed by Mr. Joseph Joyce, Base Realignment and Closure (BRAC), Environmental Coordinator (BEC), Ms. Marcia Rudolph, Restoration Advisory Board (RAB), Community Co-chair, Ms. Bonnie Arthur, Environmental Protection Agency (EPA), Remedial Project Manager, and Mr. Juan Jimenez, Department of Toxic Substances Control (DTSC), Remedial Project Manager.

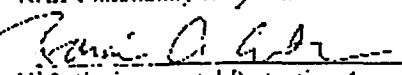
Shown below is an excerpt from the original "Mission Statement and Operating Procedures", dated February 28, 1995 with signatures of the above-mentioned individuals.

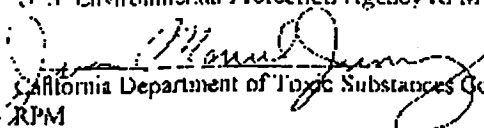
VII. Signatories to the Membership Mission Statement and Operating Procedures

IN WITNESS WHEREOF, we have set our hand this 28<sup>th</sup> day of FEBRUARY, 1995

  
MCAS El Toro BRAC Environmental Coordinator

  
RAB Community Co-Chair

  
U.S. Environmental Protection Agency RPM

  
California Department of Toxic Substances Control  
RPM

# **MCAS El Toro**

## **Installation Restoration Program**

### **MAILING LIST REQUEST COUPON**

If you would like to be on the mailing list to receive information about environmental restoration activities at MCAS El Toro, please complete the coupon below. You may mail or fax it, or use the e-mail option. If you chose to send you mailing list request via e-mail, please include the information requested in the coupon.

Base Realignment and Closure  
Attn: Ms. Marge Flesch  
7040 Trabuco Road  
Irvine, CA 92618

FAX – (949) 726-6586

E-mail – [fleschmm@efdswnavfac.navy.mil](mailto:fleschmm@efdswnavfac.navy.mil)

- ☐ Add me to the MCAS El Toro Installation Restoration Program mailing list.
- ☐ Send me information on Restoration Advisory Board membership.

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Affiliation (optional) \_\_\_\_\_

Telephone \_\_\_\_\_

**MCAS EL TORO**  
**Restoration Advisory Board - Membership Roster**

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Richard Bell  
MWD of Orange County  
P.O. Box 20895  
Fountain Valley, CA 92728  
Group Affiliation: Community Member, Metropolitan Water District

Daytime (714) 841-7809

John Broderick  
Santa Ana Regional Water Quality Control Board  
3737 Main Street, Suite 500  
Riverside, CA 92501-3338

Daytime (951) 782-4494  
FAX (951) 781-6288

+Michael S. Brown, Phd  
[REDACTED]

Daytime [REDACTED]  
FAX [REDACTED]

Group Affiliation: Technical Consultant to City of Irvine

+Tim Chauvel  
Public Participation Specialist  
Cal-EPA/Dept. of Toxic Substances Control  
5796 Corporate Avenue  
Cypress, CA 90630

Daytime (714) 484-5487  
FAX (714) 484-5329

+Viola Cooper (SFD-3)  
Community Involvement Coordinator  
U.S. EPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

Daytime (800) 231-3075 or  
(415) 972-3243

Chris Crompton  
10852 Douglass Road  
Anaheim, CA 92806  
Group Affiliation: County of Orange, Environmental Management Agency

Daytime (714) 567-6360  
FAX (714) 567-6340

Roy Herndon  
10500 Ellis Avenue  
Fountain Valley, CA 92708-8300  
Group Affiliation: Orange County Water District

Daytime (714) 378-3260  
Home [REDACTED]  
FAX (714) 378-3373

## REVISED – January 2005

Peter Hersh  
[REDACTED]  
[REDACTED]

Phone: [REDACTED]

Group Affiliation: Community Member

Gregory F. Hurley, Esq.

GT

18300 Von Karmen, Suite 850

Irvine, CA 92612

Group Affiliation: Community Member

Daytime (949) 252-8801

FAX (949) 252-8805

Dan Jung

P.O. Box 19575

Irvine, CA 92606

Group Affiliation: City of Irvine, Director of Strategic Programs, City Manager's Office

Daytime (949) 724-6424

FAX (949) 724-6045

Tayseer Mahmoud

Office of Military Affairs

Cal-EPA/Dept. of Toxic Substances Control

5796 Corporate Avenue

Cypress, CA 90630

Daytime (714) 484-5419

FAX (714) 484-5437

Steve Malloy

15600 Sand Canyon Avenue

Irvine, CA 92618

Group Affiliation: Irvine Ranch Water District

Daytime (949) 453-3370

FAX (949) 453-0228

Roland Marquis  
[REDACTED]  
[REDACTED]

Daytime (714) 821-2911

FAX (714) 821-2112

Home [REDACTED]

Group Affiliation: Community Member

Suzanne Marquis  
[REDACTED]  
[REDACTED]

Daytime (714) 821-2911

FAX (714) 821-2112

Home [REDACTED]

Group Affiliation: Community Member

Mary Aileen Matheis  
[REDACTED]  
[REDACTED]

Daytime (949) 474-7368

Home [REDACTED]

Group Affiliation: Board Member of Irvine Ranch Water District

Fred J. Meier  
[REDACTED]  
[REDACTED]

Daytime (714) 550-7551

Home [REDACTED]

FAX (714) 550-7551

Group Affiliation: Community Member, American Society of Civil Engineers, Life Member Committee, Infrastructure Advisory Committee

## REVISED – January 2005

Rich Muza (SFD-H-8)  
U. S. Environmental Protection Agency  
Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

Daytime (415) 972-3349  
FAX (415) 947-3518

### ***RAB Marine Corps/Navy Co-Chair***

Andy Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure, Environmental Div.  
P.O. Box 51718  
Irvine, CA 92619-1718

El Toro (949) 726-5398  
FAX (949) 726-6586

San Diego (619) 532-0784  
FAX (619) 532-0780

Gail Reavis

Daytime [REDACTED]  
FAX [REDACTED]

Group Affiliation: Community Member, President, Palmia Anti-airport Coalition,  
City Councilperson for Mission Viejo

Marcia Rudolph

Daytime (949) 770-9555  
Home [REDACTED]  
FAX [REDACTED]

Group Affiliation: Community Member, City Councilperson for Lake Forest

Randy Styner  
1241 East Dyer Road, Suite 120  
Santa Ana, CA 92705-5611

Daytime (714) 453-6273  
FAX (714) 754-1768

Group Affiliation: Environmental Health Division, Orange County Health Care Agency

Jerry B. Werner

Daytime [REDACTED]  
Home [REDACTED]

Group Affiliation: Community Member, Laguna Woods/Leisure World

### ***RAB Community Co-Chair (re-elected on 1/28/04, 2<sup>nd</sup> one-year term)***

Bob Woodings  
25550 Commercecentre Drive, Suite 100  
Lake Forest, CA 92630

Daytime [REDACTED]  
FAX [REDACTED]

Group Affiliation: Director of Public Works, City of Lake Forest

Donald E. Zweifel

Home [REDACTED]  
FAX [REDACTED]

Group Affiliation: Community Member, Exec. Dir., Gulf & Vietnam Vets Historical Assn.

+ Not RAB member but included on RAB member list.

# MEMBERSHIP APPLICATION

## RESTORATION ADVISORY BOARD

### MARINE CORPS AIR STATION EL TORO

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#### Conditions for Membership:

Restoration Advisory Board (RAB) members are expected to serve a two-year term and attend all RAB meetings or designate an alternate. The alternate must be jointly approved by the Department of Defense and Community Co-Chairpersons. Members who miss three or more consecutive meetings may be asked to resign. Duties and responsibilities will include reviewing and commenting on technical documents and activities associated with the environmental restoration at the former Marine Corps Air Station El Toro. Members will be expected to be available to community members and groups to facilitate the exchange of information and/or concerns between the community and the RAB.

RAB membership priority will be given to local residents that are impacted/affected by the closure of the installation. The number of RAB members may be limited.

\*\*\*\*\*

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
                    Street                                      Apt #                                      City                                      Zip

PHONE: (    ) \_\_\_\_\_ (    ) \_\_\_\_\_ Fax: (    ) \_\_\_\_\_

GROUP AFFILIATION: \_\_\_\_\_

1. Briefly state why you would like to be considered for membership on the Restoration Advisory Board (RAB)

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(Continued on back side)

2. What has been your experience working as a member of a diverse group with common goals?

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3. Please indicate if you are interested in being considered for the Community Co-Chairperson position on the RAB by checking the box below:

☐ Yes, I would like to be considered.

4. Are you willing to serve a 2-year term as a member of this RAB?

☐ Yes, I am willing to serve a 2-year term as a member of this RAB.

5. By submitting this signed application, you are aware of the time commitment which this appointment will require for you.

6. By submitting this signed application, you willingly agree to work cooperatively with other members of the committee to ensure efficient use of time for addressing community issues related to environmental restoration of the facility.

PRIVACY ACT STATEMENT: The personal information requested on this form is being collected in order to determine interest in and qualification for membership on the Restoration Advisory Board. The information will be reviewed by a selection panel and will be retained in a file at BRAC Environmental Coordinator's Office at MCAS El Toro. The information will not be disseminated. Providing information on this form is voluntary.

\_\_\_\_\_  
Applicant Signature

\_\_\_\_\_  
Date

Please return your completed application to:

Andy Piszkin  
BRAC Environmental Coordinator  
Base Realignment & Closure, Environmental Division  
MCAS El Toro  
7040 Trabuco Road  
Irvine, CA 92618

FAX – (949) 726-6586

# MCAS El Toro Installation Restoration Program

## BRAC Cleanup Team (BCT) Members\* and Key Project Representatives

### Lead Agency

Mr. Andy Piszkin\*  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Environmental Division  
MCAS El Toro  
7040 Trabuco Road  
Irvine, CA 92618  
(949) 726-5398 or (619) 532-0784  
[frank.piszkin@navy.mil](mailto:frank.piszkin@navy.mil)

♦ ♦ ♦

### For More Information

**Administrative Record (AR):** the collection of reports and documents used in the selection of cleanup or environmental management alternatives. Anyone is welcome to review AR file documents at MCAS El Toro, BRAC Office, N. 7<sup>th</sup> Street, Building 83. To schedule an appointment call Ms. Marge Flesch at (949) 726-5398, Monday-Thursday, 7:00 a.m. to 3:00 p.m.

**Information Repository (IR):** copies of reports, documents and other environmental information are available for public review.

Heritage Park Regional Library  
14361 Yale Avenue, Irvine, CA  
(949) 551-7151

Monday-Thursday – 10 am-9 pm  
Friday-Saturday – 10 am-5 pm  
Sunday – 12 pm-5 pm

### Federal Representatives

Mr. Richard Muza\*  
Project Manager  
U.S. EPA Region IX  
75 Hawthorne Street (SFD-H-8)  
San Francisco, CA 94105  
(415) 972-3349  
[muza.richard@epa.gov](mailto:muza.richard@epa.gov)

Ms. Viola Cooper  
Community Involvement Coordinator  
Superfund Division  
75 Hawthorne Street (SFD-3)  
San Francisco, CA 94105  
U.S. EPA, Region IX  
(415) 972-3243 or (800) 231-3075  
[cooper.viola@epa.gov](mailto:cooper.viola@epa.gov)

### Restoration Advisory Board Point-of-Contacts

Mr. Bob Woodings  
RAB Community Co-Chair  
(949) 461-3481  
[bwoodings@ci.lake-forest.ca.us](mailto:bwoodings@ci.lake-forest.ca.us)

Ms. Marcia Rudolph  
RAB Subcommittee Chair  


### State Representatives

Mr. Tayseer Mahmoud\*  
Project Manager, Cal/EPA Dept. of Toxic  
Substances Control (DTSC)  
5796 Corporate Avenue  
Cypress, CA 90630  
(714) 484-5419  
[tmahmoud@dtsc.ca.gov](mailto:tmahmoud@dtsc.ca.gov)

Mr. John Broderick\*  
Project Manger, Cal/EPA Regional Water  
Quality Control Board (RWQCB)  
3737 Main Street, Suite 500  
Riverside, CA 92501-3338  
(951) 782-4494  
[jbroderick@waterboards.ca.gov](mailto:jbroderick@waterboards.ca.gov)

Mr. Tim Chauvel  
Public Participation Specialist, Cal/EPA  
Dept. of Toxic Substances Control (DTSC)  
5796 Corporate Avenue  
Cypress, CA 90630  
(714) 484-5487  
[tchauvel@dtsc.ca.gov](mailto:tchauvel@dtsc.ca.gov)

Revised – October 2004



# Internet Access - Environmental Web Sites

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## *Naval Facilities Engineering Command, Southwest Division Web Site:*

[www.efdswnavfac.navy.mil/environmental/envhome.htm](http://www.efdswnavfac.navy.mil/environmental/envhome.htm)

[www.efdswnavfac.navy.mil/environmental/ElToro.htm](http://www.efdswnavfac.navy.mil/environmental/ElToro.htm)

## *Department of Defense - Environmental Web Page:*

<http://www.dtic.mil/envirodod/>

## *U.S. EPA:*

[www.epa.gov](http://www.epa.gov) (homepage)

[www.epa.gov/superfund/](http://www.epa.gov/superfund/) (Superfund)

[www.epa.gov/ncea](http://www.epa.gov/ncea) (National Center for Environmental Assessment)

[www.epa.gov/federalregister](http://www.epa.gov/federalregister) (Federal Register Environmental Documents)

[www.epa.gov/fedregst/EPA-IMPACT/2004/April/Day-27/i9203.htm](http://www.epa.gov/fedregst/EPA-IMPACT/2004/April/Day-27/i9203.htm) (site for endangered and threatened wildlife and plants, Riverside fairy shrimp)

## *Cal/EPA:*

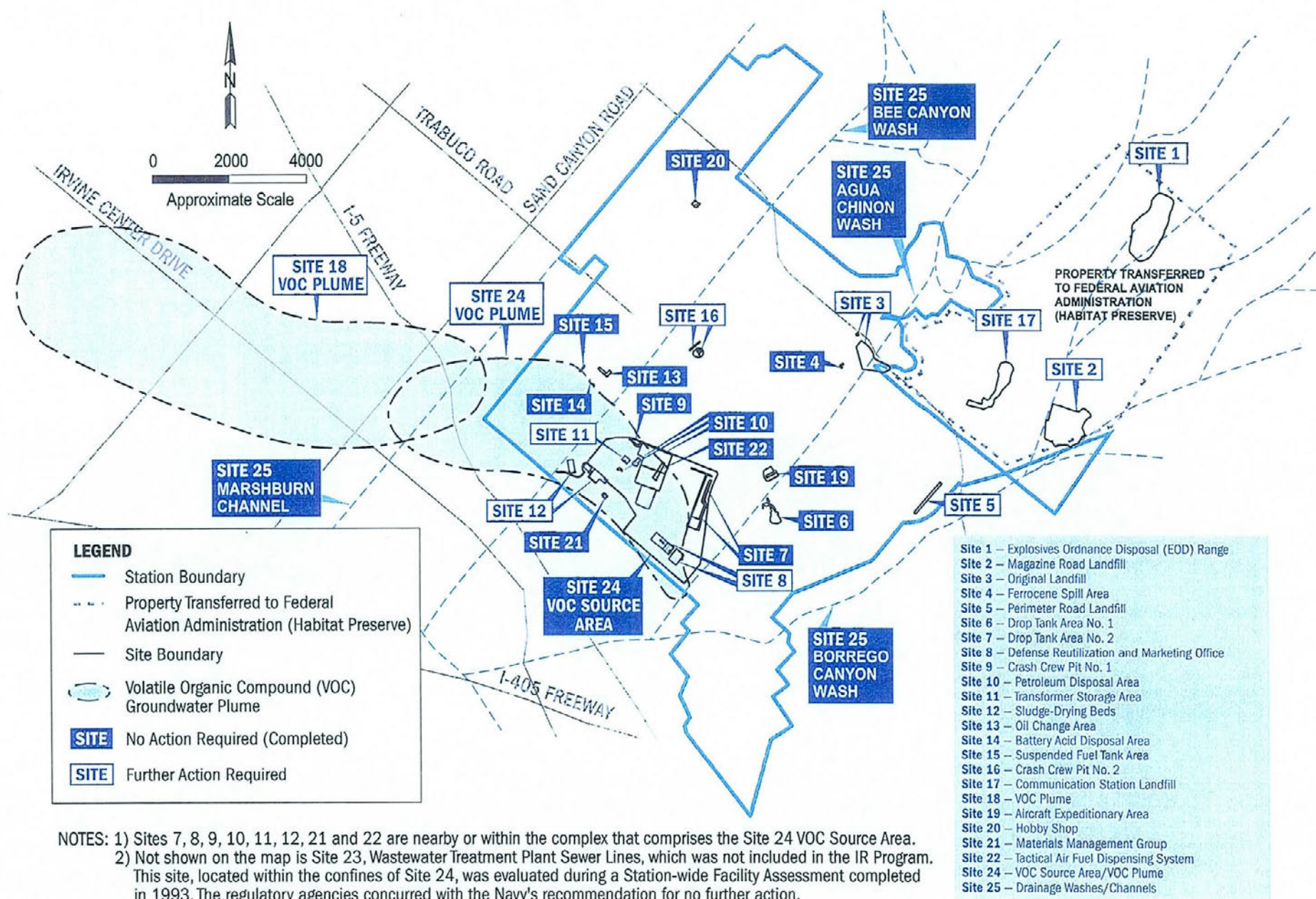
[www.calepa.ca.gov](http://www.calepa.ca.gov) (homepage)

[www.dtsc.ca.gov](http://www.dtsc.ca.gov) (Department of Toxic Substances Control)

[www.dhs.ca.gov](http://www.dhs.ca.gov) (Department of Health Services)

[www.swrcb.ca.gov/](http://www.swrcb.ca.gov/) (Santa Ana Regional Water Quality Control Board)

# MCAS El Toro Installation Restoration Program Site Location Map



# Glossary of Technical Terms

**Air Stripping:** A treatment technology that transforms VOCs in groundwater to gas for removal and treatment.

**Aquifer:** A particular zone or layer of rock or soil below the earth's surface through which groundwater moves in sufficient quantity to serve as a source of water.

**Cleanup Goals:** Chemical concentration levels that are the goals of the remedial action. Once the cleanup goals have been achieved, the remedy is considered protective of human health and the environment.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** Commonly known as the Superfund. This law authorizes EPA to respond to past hazardous waste problems that may endanger public health and the environment. CERCLA was authorized and amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

**Domestic Use:** Use of water for drinking, cooking, and bathing.

**Downgradient:** Groundwater that is downstream of an area of soil or groundwater contamination.

**Extraction Wells:** Wells used to pump groundwater to the surface for treatment or for use.

**Feasibility Study (FS):** An analysis of cleanup or remedial alternatives to evaluate their effectiveness and to enable selection of a preferred alternative.

**Federal Facility Agreement:** A voluntary agreement entered into by the Navy, U.S. EPA, and Cal-EPA (Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB)) establishing an overall framework for how the investigation and cleanup of MCAS El Toro is to be conducted.

**Groundwater:** Underground water that fills pores in soil or openings in rocks.

**Infiltration:** Process by which dissolved chemical constituents are carried by water through the soil.

**Intermediate Zone:** A generally low permeability layer that separates that shallow groundwater unit from the principal aquifer at MCAS El Toro.

**Maximum Contaminant Levels (MCLs):** The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.

**Maximum Contaminant Level Goal:** A non-enforceable concentration of a drinking-water contaminant, set at a level at which no known adverse effects on human health occur.

**Monitored Natural Attenuation:** Refers to the routine sampling and testing of groundwater to assess the cleanup effectiveness of natural attenuation processes.

**Monitoring Well:** Wells drilled at specific locations either on or near a hazardous waste site, for the purpose of determining direction of groundwater flow, types and concentrations of contaminants present, or vertical or horizontal extent of contamination.

**Natural Attenuation:** The process by which a compound is reduced in concentration over time, through adsorption, degradation, dilution, and/or transformation.

**Nitrates:** Compounds containing nitrogen which dissolve in water and may have harmful effects on humans and animals. Nitrates are commonly used in fertilizers.

**Operable Unit (OU):** Term for each of a number of separate activities undertaken as part of a Superfund site cleanup.

**Plume:** A three-dimensional zone within the groundwater aquifer containing contaminants that generally move in the direction of, and with, groundwater flow.

**Principal Aquifer:** The main (regional) water-bearing aquifer in the vicinity of MCAS El Toro.

**Rebound:** The tendency of soil gas concentrations to increase after SVE is turned off.

**Record of Decision (ROD):** A public document that explains what cleanup alternative will be used at a specific NPL site. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns.

**Remedial Action (RA):** The actual construction or implementation phase that follows the remedial design of the selected cleanup alternative at a Superfund site.

**Remedial Design (RD):** The design of the selected cleanup alternative for a Superfund site.

**Remedial Investigation (RI):** One of the two major studies that must be completed before a decision can be made about how to clean up a Superfund site. (The FS is the second major study.) The RI is designed to determine the nature and extent of contamination at the site.

**Shallow Groundwater Unit:** The shallowest water-bearing zone beneath MCAS El Toro.

**Soil Gas:** Gas found in soil pore space. In contaminated areas, soil gas may include VOCs.

**Soil Vapor Extraction (SVE):** A process whereby contaminated soil gas is brought to the surface for treatment.

**Trichloroethene (TCE):** A volatile organic compound that has been widely used as an industrial solvent. TCE is a colorless, odorless liquid that, when inhaled or ingested in large amounts, can cause irritation of the nose, throat, and eyes, nausea, blurry vision, or dermatitis. EPA has classified TCE as a "probable human carcinogen."

**Total Dissolved Solids (TDS):** Used to reflect salinity of groundwater.

**Upgradient:** Groundwater that is upstream of an area of soil or groundwater contamination.

**Volatile Organic Compound (VOC):** An organic (carbon containing) compound that evaporates readily at room temperature. VOCs are commonly used in dry cleaning, metal plating, and machinery degreasing operations.

**Water Quality Standards:** State-adopted and U.S. EPA-approved ambient standards for water bodies. The standards cover the use of the water body and the water quality criteria which must be met to protect the designated use or uses.



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
2000 NAVY PENTAGON  
WASHINGTON, D. C. 20350-2000

IN REPLY REFER TO

5090  
Ser N453D/1U595697  
NOV 29 2001

From: Chief of Naval Operations

To: Distribution

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL  
RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)  
STATUTORY FIVE-YEAR REVIEWS, NOVEMBER 2001

Ref: (a) Navy/Marine Corps Installation Restoration Manual  
(Feb 97)

Encl: (1) Navy/Marine Corps Policy for Conducting Comprehensive  
Environmental Response, Compensation, and Liability  
Act (CERCLA) Statutory Five-year Reviews, November,  
2001

1. Enclosure (1) establishes procedures for conducting five-year reviews, facilitates consistency of five-year reviews across the Navy/Marine Corps, clarifies current policy, and delineates roles and responsibilities of various entities in conducting or supporting five-year reviews.

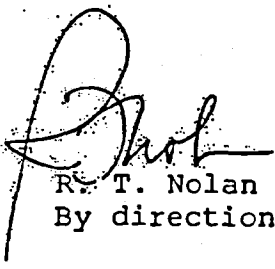
2. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), requires that remedial actions resulting in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to assure protection of human health and the environment, regardless of the National Priorities List (NPL) status of the site or installation.

3. This policy has been coordinated and concurred with by the Marine Corps.

4. This policy will be included in the next revision to reference (a). It will also be available on the N45 website (<http://web.dandp.com/n45/index.html>) under Environmental Restoration/Training, References.

Subj: POLICY FOR CONDUCTING COMPREHENSIVE ENVIRONMENTAL  
RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)  
STATUTORY FIVE-YEAR REVIEWS

5. Questions or comments concerning this policy should be  
directed to Mr. Geoffrey D. Cullison, CNO N453D, 2211 So. Clark  
St., Arlington, VA 22202-3735, (703) 602-5329 (DSN 332-5329),  
cullison.geoffrey@hq.navy.mil.

  
R. T. Nolan  
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**Navy/Marine Corps Policy for  
Conducting Comprehensive Environmental Response, Compensation,  
and Liability Act (CERCLA) Statutory Five-year Reviews  
November 2001**

**Ref:** EPA Comprehensive Five-Year Review Guidance, June 2001, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, §1.3.1

**1. Statutory requirements:**

a. The statutory requirement for five-year review was added to CERCLA as part of the Superfund Amendments and Reauthorization Act of 1986 (SARA). A five-year review is required when both of the following conditions are met, whether the site is on the National Priorities List (NPL) or not:

1) Upon completion of the remedial actions at a site, hazardous substances, pollutants, or contaminants will remain above levels that allow for unlimited use and unrestricted exposure. For example, if a site is restricted to industrial use because hazardous substances, pollutants, or contaminants remain above levels that allow for unlimited use and unrestricted exposure, five-year reviews must be conducted.

2) The Record of Decision (ROD) or Decision Document (DD) for the site was signed on or after October 17, 1986 (the effective date of SARA).

b. CERCLA §121(c), as amended, states:

*If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five-years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

c. The National Contingency Plan (NCP), 42 U.S.C. § 9621(c), implementing regulations, 40 C.F.R. Part 300.430(f)(4)(ii), provide:

*If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.*



d. Consistent with Executive Order 12580, the Secretary of Defense is responsible for ensuring that five-year reviews are conducted at all qualifying Department of Defense (DoD) cleanup sites.

e ... EPA classifies five-year review as either "statutory" or "policy" depending on whether it is required by statute or conducted as a matter of EPA policy. In particular, EPA views five-year reviews conducted of RODS issued before October 17, 1986 as being conducted as a matter of policy because the five-year review requirement didn't become law until that date. Statutory five-year reviews are required by law and will be conducted by the Navy/Marine Corps at any site meeting the requirements of the law. We generally do not conduct policy five-year reviews.

## **2. Definitions:**

a. For purpose of this policy, "site" means a location on an installation's property where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located where, upon completion of the remedial action, hazardous substances, pollutants, or contaminants will remain at the site above levels that allow for unlimited use and unrestricted exposure. This includes areas off the installation where contamination may have migrated. For purpose of this policy, "site" also means Operable Unit.

b. "Unlimited use" and "unrestricted exposure" mean that there are no restrictions on the potential use of land or other natural resources.

## **3. Purpose of a five-year review:**

a. The purpose of a five-year review is not to reconsider decisions made during the selection of the remedy, as specified in the ROD, but to evaluate the implementation and performance of the selected remedy.

b. Where a site has a remedial action that is still in the Remedial Action-Construction (RA-C) phase or the Remedial Action-Operations (RA-O) phase, a five-year review should confirm that immediate threats have been addressed and that the remedy will be protective when complete.

c. Where a site is in the Long Term Management (LTMgt) phase, the five-year review should confirm whether the selected remedy remains protective.

d. When the five-year review indicates that the remedy is not performing as designed, the report should recommend actions to improve performance.

**4. NPL status:** The continuing presence of hazardous substances, pollutants, or contaminants above levels that allow for unlimited use and unrestricted exposure under CERCLA establishes the requirement for a five-year review, not the NPL status of the installation. Reference (a) states that EPA will delete an installation from the NPL when deletion criteria have been satisfied and that an installation will not be kept on the NPL solely because it is subject to five-year reviews. If the installation has been deleted or is in the process of being deleted, the five-year review report should address the status of any deletion action.

**5. Resource Conservation and Recovery Act (RCRA) response:** Five-year reviews are not required if cleanup of a site is addressed under RCRA corrective action. In cases where both RCRA and CERCLA authorities are used to address different sites on an installation, a five-year review is only required for those portions of the installation being addressed under CERCLA that meet the criteria for five-year reviews. When a RCRA action is included as a portion of a ROD or DD or other CERCLA decision document, the RCRA action should be included in the five-year review.

**6. Interim remedial action:** By itself, an interim remedial action at a site does not start the clock for a five year review of that site; it is treated like any other remedial action for the purpose of five-year reviews. An interim remedial action triggers the five-year review clock if it meets any of the criteria outlined in paragraph 1. above. For instance, if an alternate water supply is installed but hazardous substances, pollutants, or contaminants remain onsite above levels that allow for unlimited use and unrestricted exposure, a review is required by statute. A subsequent action may then reduce the hazardous substances, pollutants, or contaminants to levels allowing unlimited use and unrestricted exposure. Remedial actions are those actions consistent with a permanent remedy taken instead of, or in addition to, removal action.

**7. Five-year review "trigger":**

a. In keeping with the requirements of CERCLA §121(c) and the NCP, initiation of the selected remedial action that will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure after the remedial action is complete is the "trigger" that starts the five-year review clock. For most Navy/Marine Corps sites, this "trigger" is the onsite mobilization for commencement of the RA-C phase.

b. The first site on an installation that triggers the five-year review clock triggers the five year review clock for the entire installation, or that portion of the installation addressed under the ROD or DD.



c. Where the selected remedy will result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure but will not require a RA-C phase, such as monitored natural attenuation using existing wells and/or institutional controls, the remedy start date is the ROD or DD signature date and therefore is also the trigger for the five-year review clock.

#### **8. Five-year review due dates:**

a. The five-year review report for a site is to be completed and signed within five years of the trigger date for that site. Subsequent five-year reviews should be signed no later than five-years after the signature date of the previous five-year review reports.

b. Because the regulators do not have a statutory role in the conduct of five-year reviews, it will be up to Navy/Marine Corps to enforce the five-year review dates. To assist the field in tracking five-year review dates, there is a field in NORM that allows management to track these dates.

**9. Results of a five-year review:** The results of the five-year review are presented in a five-year review report.

a. The five-year review report should;

- 1) clearly state whether the remedy is or is expected to be protective,
- 2) document any deficiencies identified during the review, and
- 3) recommend specific actions to ensure that a remedy will be or will continue to be protective.

b. Where necessary, five-year review reports should include descriptions of follow-up actions needed to achieve, or to continue to ensure, protectiveness. Along with these recommendations, the report should list a timetable for performing the actions and the parties responsible for implementation.

c. If it is determined that cleanup levels or remedial action objectives cannot be achieved through the remedial action, the recommendations may suggest the type of decision process (e.g., ROD or DD, ROD or DD Amendment, Explanation of Significant Differences (ESD)) needed to evaluate or make changes to the remedy, cleanup levels, or remedial action objectives.

d. For sites that are still in the RA-O phase (pre-Response complete) where evaluation and optimization of the remedial action operations are performed routinely, most information for the five-year review should be readily available.

**10. Review and Signature:** Pursuant to the delegations of authority in sections 2(d) and 11(g) of Executive Order 12580, and DoD Instruction 4715.7 of 22 April, 1996, Department of the Navy (DON) is the approval authority for CERCLA five-year reviews conducted at sites under its jurisdiction, custody or control.

a. Five-year reviews completed with ER,N or BRAC funds will be signed by the Commanding Officer of the supporting EFD/A.

b. Five-year reviews completed with installation funds will be signed by the installation Commanding Officer/Commanding General or a designee of the Regional Environmental Coordinator.

c. Regulatory agencies have no statutory review authority in five-year reviews conducted by DON in its Lead Agent authority except where some past DON Federal Facility Agreements (FFAs) have included five-year review reports as enforceable primary documents. Future FFAs and Federal Facility-State Remediation Agreements (FFSRAs) are not to include five-year review reports as either primary or secondary documents. However, five-year reviews may be submitted to the appropriate regulators for their review and comment as a matter of partnering.

**11. Keeping the community informed:**

a. Because the five-year review addresses the status and protectiveness of a remedy, it should be used to communicate this information to the community. If the Restoration Advisory Board (RAB) is still active at the installation, preparation for and conduct of the five-year review should be an agenda item at each RAB meeting conducted while the five-year review is underway. Where necessary, additional RAB meetings should be held to ensure the community is kept up to date on progress and results of the five-year review. If the RAB is inactive or has disbanded, the installation shall determine the most effective approach to informing the community based on the level of community interest. At a minimum, community involvement activities during the five-year review should include notifying the community that the five-year review will be conducted, notifying the community that the five-year review has been completed, and providing the results of the review to the local site repository.

b. The installation Public Affairs Officer can recommend appropriate methods of communication (e.g., public notices, fact sheets) for notifying the public.

c. Upon completion of the five-year review and Five-Year Review Report, a brief summary of the report should be made available to the stakeholders. The summary should include a short description of the remedial action, any deficiencies, recommendations and follow-up actions that are directly related to protectiveness of the remedy, and the determination(s) of whether the remedy is or is expected to be protective of human health and the environment. The summary should also provide the location of the site information repository and/or where a copy of the complete report can be obtained, and provide the date of the next five-year review or notify the community when five-year reviews will no longer be necessary.

e. Five year reviews are not Administrative Record material and are not to be included therein. However, the RPM should ensure that the signed five-year review report is placed in the site information repository.

## **12. Discontinuing five-year reviews:**

a. There is no statutory provision for the discontinuation of statutory reviews. However, EPA acknowledges in reference (a) that five-year reviews may no longer be needed when no hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure, reference (a), paragraph 1.2.4. The basis for this finding should be documented in the final Five-Year Review report.

b. If a ROD or DD states that a five-year review will be performed, but prior to conducting the first review the EFD/EFA determines that no review is required, this finding should be recorded in a major document subject to public comment, such as a Proposed Plan or a Notice of Intent to Delete.



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
2000 NAVY PENTAGON  
WASHINGTON, DC 20350-2000

IN REPLY REFER TO

5090  
N45C/N4U732343  
23 April 2004

From: Chief of Naval Operations, Environmental Readiness  
Division (N45)  
To: Distribution

Subj: POLICY FOR OPTIMIZING REMEDIAL AND REMOVAL ACTIONS UNDER  
THE ENVIRONMENTAL RESTORATION PROGRAMS

Ref: (a) Management Guidance for Defense Environmental  
Restoration Program (DERP), September 2001  
(b) Navy/Marine Corps Installation Restoration Manual,  
June 2001  
(c) Navy Guidance for Optimizing Remedial Action  
Operation (RAO), April 2001  
(d) Navy Guide to Optimal Groundwater Monitoring,  
January 2000  
(e) Navy Guidance for Optimizing Remedy Evaluation,  
Selection and Design, April 2004

Encl: (1) Navy/Marine Corps Policy for Optimizing Remedial and  
Removal Actions, April 2004

1. Enclosure (1) establishes procedures for optimizing the screening, evaluation, selection, design, and implementation for long-term operation and management of response actions conducted under the Environmental Restoration (ER) Program, which includes the Installation Restoration (IR) and Munitions Response (MR) Programs. This policy is to be applied to both remedial and removal actions. Implementation of this policy will ensure that the Navy/Marine Corps consistently monitors, tracks, and reports the optimization efforts for all ER sites.

2. Section 20 of reference (a) requires the Department of Defense (DoD) Components to continually evaluate remedies. This policy will ensure that all remedies are continually evaluated. Reference (b) outlines the process the Navy/Marine Corps follows in implementing the ER Program. References (c) through (e) provide specific guidance for meeting the requirements of enclosure (1).

Enclosure (1)

Subj: POLICY FOR OPTIMIZING REMEDIAL AND REMOVAL ACTIONS UNDER  
THE ENVIRONMENTAL RESTORATION PROGRAMS

3. This policy has been coordinated and concurred with by the  
Marine Corps.

4. This policy will be included in the next revision to  
reference (b). It will also be available on the N45 website  
(<http://web.dandp.com/n45/index.html>) under Environmental  
Restoration/Training, References.

5. My point of contact concerning this policy is Mr. Dave  
Olson, N45C, (703) 602-2571, DSN: 332-2571 or email at  
david.l.olson@navy.mil.

*William G. Mattheis*  
WILLIAM G. MATTHEIS  
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Navy/Marine Corps Policy for  
Optimizing Remedial and Removal Actions  
At all Installation Restoration and Munitions Response Program  
Sites  
April 2004

Background

As the Navy/Marine Corps have progressed through implementation of the Installation Restoration (IR) Program and begun the Munitions Response (MR) Program, many sites have advanced through the remedy evaluation, selection, design, and construction phases and are undergoing Remedial Action Operation (RAO) and Long Term Management (LTMgt). This has shifted a growing proportion of the available Environmental Restoration Navy (ER,N) and Base Realignment and Closure (BRAC) funds to these long-term site cleanup commitments. Continued monitoring of these remedies has indicated that some remedies selected are not meeting cleanup objectives as planned. Further evaluation of specific sites has revealed several areas where optimization efforts could be applied to ensure the most appropriate remedies are screened, evaluated, selected, designed, and properly operated/maintained, and that options are available to modify systems to ensure cleanup objectives are met in a timely, cost effective manner. These results prompted the need for further optimization direction. Section 20 of the Management Guidance for Defense Environmental Restoration Program (DERP), September 2001, requires the Components to continually optimize remedies. This policy outlines the Navy/Marine Corps efforts to be conducted to ensure all remedies are continually optimized through evaluation of all available data at each phase of the project.

Applicability

This policy applies to all response cleanup actions conducted at Navy/Marine Corps IR and MR Sites. It applies equally to response actions at active installations as well as closing installations. The procedures outlined in this policy and the referenced guidance documents are to be used during the following phases:

- Feasibility Study and/or Engineering Evaluation/Cost Analysis
- Record of Decision and/or Action Memorandum (Remedy Selection)
- Remedial Design

- Remedial and/or Removal Action Construction
- Remedial/Removal Action Operation
- Long Term Management

The principles of this policy will also apply to any other sub-phases or related phases, including RCRA corrective actions, which accomplish the goals of the phases listed above.

## Policy

**1. Planning, Design, and Construction** - During the planning stages of the remedial and/or removal action processes, the guidance outlined in the Navy Guidance for Optimizing Remedy Evaluation, Selection and Design (April 2004) shall be followed. This guidance document applies, at a minimum, to the following phases of the cleanup program:

- Feasibility Study and/or Engineering Evaluation/Cost Analysis
- Record of Decision and/or Action Memorandum (Remedy Selection)
- Remedial Design

This guidance document could also be referenced during the Remedial and/or Removal Action Construction phase. Applicability during this phase will likely be due to changed conditions found during construction.

Following this guidance during these phases of the cleanup process will ensure that the most appropriate response actions are screened, evaluated, selected, and designed for each Navy/Marine Corps IR and MR Site.

**Special Technical Issue:** Since 1998, Navy, other DoD Components, and the Environmental Protection Agency (EPA) have been conducting evaluations of the effectiveness of "pump and treat" systems to address groundwater contamination. Consensus of all parties is that pump and treat systems are rarely the optimal alternative for groundwater response actions. Therefore, any plans to install new pump and treat systems on Navy and Marine Corps installations requires approval from Headquarters (HQ) at the Naval Facilities Engineering Command (NAVFAC). This requirement applies to all "pump and treat" systems (remedial and removal actions) where groundwater is removed from the sub-surface by pumping or other means, treated above ground in any way, and discharged in any way (i.e. off site disposal, sewer systems, re-injected, etc.). In order to receive the NAVFAC HQ approval, the IR Manager shall forward a summary of the site background, the conceptual site model (CSM), the remedial action objectives, a listing of the technologies screened for the site, a summary of the alternatives analysis, and a statement of why "pump and treat" is the most appropriate technology to be used at the site, including a life cycle cost analysis (net present value and total site cost) and exit



strategy. NAVFAC HQ will provide a written approval/disapproval response to the IR Manager based on review of this submittal.

**2. Operation** - Following completion of the construction of the remedial/removal system (for sites where the remedial action objective is not achieved at the completion of the remedial action construction phase), operation of the remedial/removal system commences. The performance of these systems should be evaluated at least annually to measure progress toward the remedial action objective. The Navy Guidance for Optimizing Remedial Action Operation (RAO), April 2001, shall be followed for optimizing the RAO phase of the process and the Navy Guide to Optimal Groundwater Monitoring, January 2000 shall be followed to optimize any groundwater monitoring program(s) (if part of the remedy selected).

Following this guidance document during the RAO phase will ensure that the remedy is operating efficiently and as designed. Spatial and temporal trend analysis of data will help assess system performance and its ability to effectively treat the target area and contaminants. Data analysis shall be used to determine when each technology has reached its effective use, when it is time to transition a remedy to a sequential phase, determine whether a remedy needs to be modified or replaced with a more effective system, and when remedial objectives have been met.

**3. Long Term Management** - When the remedial action objectives have been met and the Response Complete (RC) milestone has been reached, there may be a need for further long term management (LTMgt) to ensure the remedy remains protective if the cleanup levels achieved do not allow for unrestricted use of the property. The Navy Guide to Optimal Groundwater Monitoring, January 2000 shall be followed for the groundwater monitoring portion of the LTMgt phase. NAVFAC is also working on some additional LTMgt guidance documents to address other aspects of the LTMgt phase, which shall be followed when complete.

Following these guidance documents will ensure that the LTMgt requirements are achieved in a cost effective manner. Periodic evaluation of these requirements and site conditions will ensure that sites in this phase ultimately receive Site Closeout status, thus allowing the site to eventually be used for unrestricted use.

**4. Tracking and Reporting** - A new module has been added to the Navy's NORM database. RPMS shall update the information semi-

annually to track optimization efforts through all phases of the cleanup process. The Navy will use this data to report on our efforts to continuously optimize our remedies. Specific guidance for inputting data into NORM shall be provided in future NAVFAC HQ Budget Guidance documents.



# INSTITUTIONAL CONTROLS

## What they are and how they are used

### WHAT IS AN INSTITUTIONAL CONTROL?

The purpose of this fact sheet is to provide an overview of Institutional Controls (IC) and how they are used. A separate fact sheet is being developed on establishing and maintaining ICs as part of an environmental cleanup remedy decision. That fact sheet will also be available on the Department of Defense (DoD) BRAC Environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.

- ICs have a long history as a tool in property law and their use in a non-environmental context is quite common. An example of an IC in a non-environmental context is a prohibition against having a television reception satellite dish in a planned community.
- An IC is a legal or institutional mechanism that limits access to or use of property, or warns of a hazard. An IC can be imposed by the property owner, such as use restrictions contained in a deed or by a government, such as a zoning restriction.

### USES OF INSTITUTIONAL CONTROLS IN ENVIRONMENTAL CLEANUP

- ICs are used to ensure protection of human health and the environment.
- ICs are used to protect ongoing remedial activities and to ensure viability of the remedy.
- ICs are specifically provided for by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP).
- DoD has used and will use ICs in remedial activities during cleanup and as part of a final remedy.

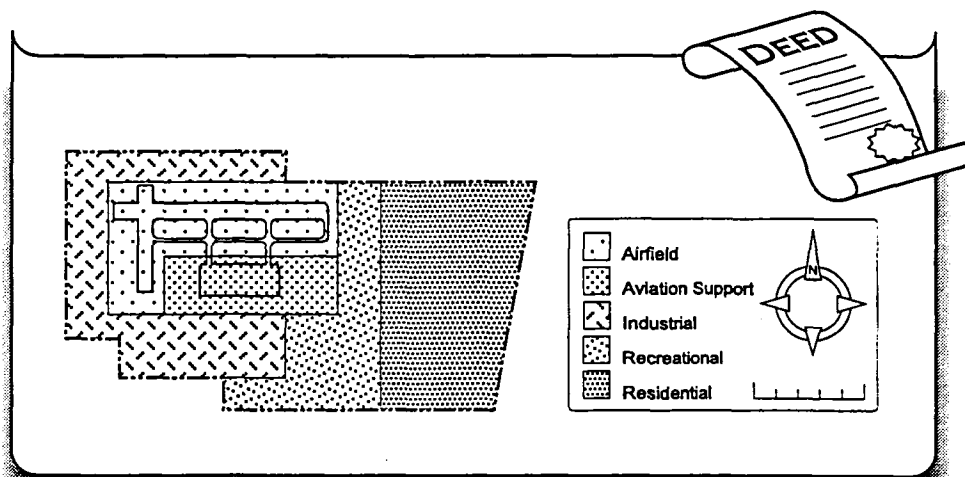
### TYPES OF INSTITUTIONAL CONTROLS

ICs fall into two categories:

- Proprietary controls
- Governmental controls

### WHAT IS A PROPRIETARY CONTROL?

- A proprietary control is a private contractual mechanism contained in

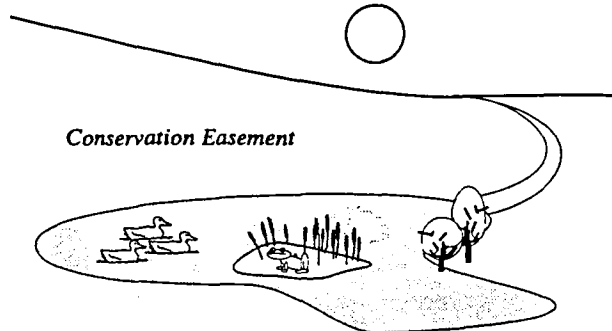


the deed or other document transferring the property.

- Proprietary controls involve the placement of restrictions on land through the use of easements, covenants, and reversionary interests. Easements, covenants, and reversionary interests are nonpossessory interests. Nonpossessory interests give their holders the right to use or restrict the use of land, but not to possess it.
- State law varies on the application and enforcement of such restrictions.

### *What is an Easement?*

- An easement allows the holder to use the land of another, or to restrict the uses of the land. For example, a conservation easement restricts the owner to uses that are compatible with conservation of the environment or scenery.



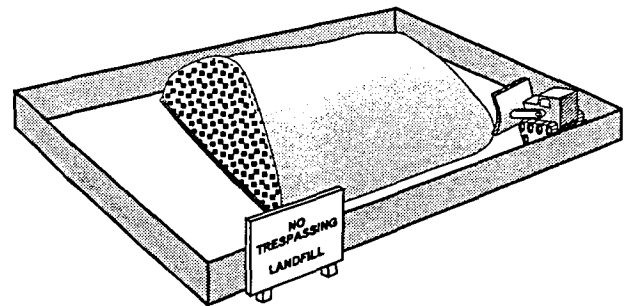
- If the owner violates the easement, the holder may bring suit to restrain the owner.
- An easement "appurtenant" provides a specific benefit to a particular piece of land. For example, allowing a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, benefits by having beach access through your land.
- An easement "in gross" benefits an individual or company. For example, allowing the utility company to come on your land to lay a gas line. The utility company, the holder of the easement, benefits by having use of the land to lay the gas line.
- An affirmative easement allows the holder to use another's land in a way that, without the ease-

ment, would be unlawful-- for example, allowing a use that would otherwise be a trespass.

- A negative easement prohibits a lawful use of land — for example, creating a restriction on the type and amount of development on land.

### *What is a Covenant?*

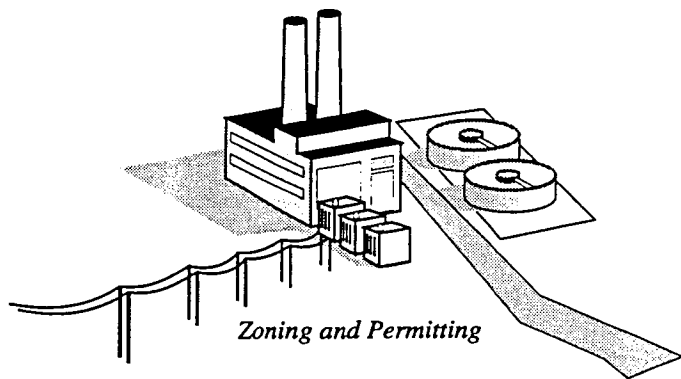
- A covenant is a promise that certain actions have been taken, will be taken, or may not be taken.
- Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners.
- An affirmative covenant is a promise that the owner will do something that the owner might not otherwise be obligated to do -- for example, maintaining a fence on the property that surrounds a landfill.



- A negative covenant is a promise that an owner will not do something that the owner is otherwise free to do -- for example, restricting the use of groundwater on the land.

### *What is a Reversionary Interest?*

- A reversionary interest places a condition on the transferee's right to own and occupy the land. If the condition is violated, the property is returned to the original owner or the owner's successors.
- Each owner in the chain of title must comply with conditions placed on the property. If a condition is violated the property can revert to the original owner, even if there have been several transfers in the chain of title.



## WHAT IS A GOVERNMENTAL CONTROL?

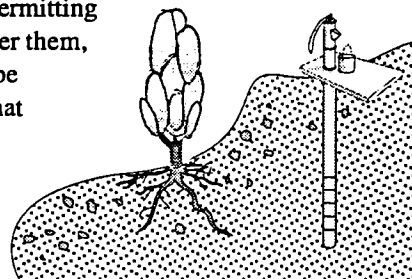
- Governmental controls are restrictions that are within the traditional police powers of state and local governments to impose and enforce.
- Permit programs and planning and zoning limits on land use are examples of governmental controls.

### *What are possible governmental controls?*

- **Zoning**— Use restrictions imposed through the local zoning or land use planning authority. Such

restrictions can limit access and prohibit disturbance of the remedy. Zoning authority does not exist in every jurisdiction.

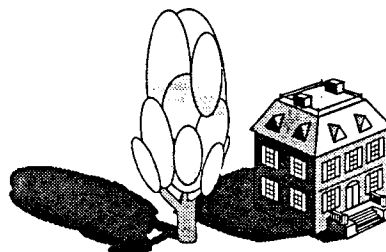
- **Siting restrictions** — Control land use in areas subject to natural hazards, such as earthquakes, fires, or floods. Such restrictions are created through statutory authority to require that states implement and enforce certain land use controls as well through local ordinances.
- **Groundwater restrictions**— Specific classification systems used to protect the quality of or use of ground water. These systems operate through a state well permitting system. Under them, criteria may be established that must be met before a use permit or construction is allowed.



## Examples of the Application of Institutional Controls

### Historic Preservation at U.S. Customs House, Boston

In 1987, the Custom House in Boston was deemed excess and the General Services Administration (GSA), through special legislation, sold it to the Boston Redevelopment Authority. At the time of the sale, the GSA placed an historic preservation covenant in the deed to protect the exterior architectural and structural integrity of the building. The Boston Redevelopment Authority wanted to resell the Custom House to a developer that planned to connect it by a skyway to a building half a block away. When GSA refused to remove the historic covenant, the deal fell through. Several years later, the Marriott Corporation proposed a plan to buy the Custom House and create an urban park between the Marriott at the Wharf and the Custom House. Under the plan, the building will retain its historic appearance and will be used as one of Marriott's time-share properties.



### Examples of the Application of Institutional Controls

#### Limiting Subsurface Use at Former Minuteman Missile Silos

With the end of the Cold War, the Department of Defense announced the retirement of the Force Minuteman missile system in North and South Dakota and Missouri. As allowed by the Strategic Arms Reduction Treaty, the Air Force, after extensive technical analysis and public comment, determined that dismantlement of the missile facilities would be accomplished by imploding the structures, capturing the contamination within the concrete structures; capping each structure with a combination of three feet of soil and a thick plastic liner; and contouring the landscape at an additional depth of seven feet above the facility. The Air Force also determined that CERCLA 120(h) applied to the transfer of these facilities to non-federal entities. The Air Force and the U.S. Environmental Protection Agency (EPA) found a sensible approach to address environmental issues, which was formalized in an agreement between the two agencies. The agreement calls for the GSA in disposing the property to notify federal and state regulators when the property is transferred; provide prior notice to and obtain the approval of federal and state regulators for any construction or other activity that would affect the underground facility or groundwater monitoring wells; and place restrictions in the deed of conveyance to prohibit future property owners from installing water wells or otherwise physically penetrating beneath the surface of the site below two feet. The Air Force and regulators also were provided with rights of access. The ICs are in place for the disposal of these missile sites in North and South Dakota and Missouri.

#### Other Sources of Information

1. John Pendergrass, *Use of Institutional Controls as Part of a Superfund Remedy: Lessons from Other Programs*, 26 ELR 10219 (March 1996).
2. Report of the Future Land Use Working Group to the Defense Environmental Response Task Force, *Types of Institutional Controls*, (May 1996), available on DoD BRAC environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.
3. Report to the Future Land Use Working Group to the Defense Environmental Response Task Force, *Making Institutional Controls Effective*, (September 1996) available on DoD BRAC environmental homepage at <http://www.dtic.mil/envirodod/envbrac.html>.

#### NOTICE

We welcome and invite your comments on this fact sheet, as we seek ways to improve the information provided. Please send comments to the following address:

**OADUSD (Environmental Cleanup)**

Attn: Fast-track Cleanup

3400 Defense Pentagon

Washington, D.C. 20301-3400.



February 1998

# A Guide to Establishing Institutional Controls at Closing Military Installations

## About This Guide

This guide supplements the land use matrix developed under the February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" by helping to ensure the compatibility between the selected land use and the selected remedy. The land use matrix is intended as a tool to build consensus among Base Realignment and Closure (BRAC) cleanup teams (BCTs), local redevelopment authorities (LRAs), restoration advisory boards (RABs), and other community members, as well as to identify and resolve the complex restoration and reuse issues at closing installations. This guide further explains land use restrictions, namely institutional controls (ICs), that may be associated with a restoration and reuse alternative. This guide is intended to:

*ICs are mechanisms that protect property users and the public from existing site contamination that continues to be present during the use of a site.*

- facilitate, early in the process, discussions among stakeholders to enhance understanding of ICs, i.e., what they are and how they might be used as part of a proposed remedy alternative in the BRAC cleanup program;
- act as a planning tool and checklist to assist stakeholders in considering a selected remedy which does in fact include the use of ICs; and
- provide a framework for building cooperation among the stakeholders in the establishment and maintenance of ICs.

For a particular restoration and reuse alternative, the stakeholders may identify the need for ICs. This guide assumes that the LRA will take the environmental condition of property into account in development of its reuse plan, and that use restrictions will be included in the remedy decision arrived at through the remedy selection process. In this guide, ICs are taken to be mechanisms that protect property users and the public from existing contamination that continues to be present during the use of a site. A more detailed explanation of ICs is presented in the BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How They Are Used* (see "Where to Learn More," page 8). There may be other ICs associated with the property but not related directly to an environmental response action, such as historic and cultural preservation, access for utility maintenance, or ecological concerns, e.g., wetlands and wildlife protection.

Conflict can arise among stakeholders during the process of identifying and evaluating restoration and reuse alternatives. A detailed discussion of conflict resolution techniques can be found in the July 1996 document entitled *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (see "Where to Learn More," page 8). That guide provides techniques for forming and maintaining an effective problem-finding, problem-solving team. By applying the techniques described, the parties involved in establishing and maintaining ICs can identify common issues and maximize the effectiveness of the tools available to each.



## What Is the Role of Institutional Controls in the Remedy Selection Process?

The potential need for ICs is identified when stakeholders develop the land use matrix recommended in the BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations*. When various restoration and reuse alternatives are being developed, the first question to be asked is:

*Does this alternative require some sort of control or limit on use of the property?*

If the answer to that question is "yes," then this guide should be used to evaluate how an IC would be established. Considering the pros and cons of establishing and maintaining ICs should be an integral part of the decision-making process in the selection of a restoration action. When ICs are used, they are a vital part of the remedy and must be maintained to protect human health and the environment. ICs are legal mechanisms, such as deed restrictions, and may be coupled with physical controls, such as signs posted at the site or fences. The control or notice mechanism will vary depending on the nature of the contamination, its location, the targeted land use, the structures located on the site, and the length of time for which the use is restricted.

*During remedy selection, the nature and extent of specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property.*

Once remedy alternatives, including ICs, have been identified, the remedy selection process is applied to evaluate the alternative as a whole, including any ICs involved. For example, using the process under the National Contingency Plan (NCP) for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the BCT will develop a proposal on which the public and regulatory agencies will be invited to comment — both in writing and at a public meeting. A response to those comments will be prepared, and a response action selected. Throughout the remedy selection process, the ICs will be evaluated in the same manner as all other components of a potential remedy, as required by statute and Executive Order 12580. Stakeholders need to seriously consider and discuss all aspects of establishing, maintaining, and funding ICs as part of a remedy.

Two situations commonly occur in which ICs play an important role: (1) to protect the integrity of an engineering control intended to contain contamination, reduce its mobility, and minimize exposure, such as a landfill cap, and (2) to limit the exposure of individuals to residual contamination by limiting the reuse activities associated with that portion of the installation.

The information collected during the Remedial Investigation is used to determine if contamination is present and to characterize the site. In some cases, removing all contamination to allow unrestricted use of property may be very costly, the technology may be unavailable, or the time required to remediate and transfer the property may be prohibitive considering the community's reuse requirements for planned reuse and timing of property transfer.

The preferred remedy, protective of human health and the environment, sometimes requires that contaminants not be disturbed, leaving them in place. For example, the excavation of landfills can actually increase the risk to human health and the environment, in the short term, by exposing toxic contamination. One approach to reducing the long-term risk associated with such contamination left in place is to limit the uses to which that property will be put. The limit may be broad — for example, no residential occupancy — or it may be specific — for example, any activity involving the disturbance of soil must be approved in advance and any excavated soil must be disposed of properly.

During the remedy selection, the nature and extent of the specific limits placed on future property use should be discussed with the community and the LRA so that they may be considered in planning reuse of BRAC property. Although the final details, such as engineering plans, zoning plans, and certain longer-term ICs such as deed restrictions, will not be determined until the Remedial Design is developed, the Feasibility Study (FS) should provide as clear a description as possible of the nature of the anticipated restrictions. Another important element of the FS is the anticipated duration of the restriction. If the





restriction is limited to a relatively short period during the actual remediation, it will have a very different impact on reuse than a restriction that is anticipated to last for a longer period of time. Such a longer-term restriction, for example, might be a restriction on groundwater use until treatment or attenuation has reduced contaminant levels to below health-based standards or a restriction on surface use over a landfill cap.

The proposed plan outlines the preferred remedial alternative and summarizes the other alternatives considered in the FS. The proposed plan should be written in a manner that can be easily understood by the public. A clear statement of the restrictions associated with the proposed action should be included to allow the public to be fully informed about the proposed action and implications of using ICs if they are a part of that action. The remedy selection process under CERCLA and the Environmental Protection Agency's (EPA) position on the use of ICs are described in the National Contingency Plan (NCP) (40 CFR Part 300.430(a)(1)(iii)) and its preamble (55 FR 8706). Under the NCP, community acceptance is one of the nine criteria for selecting a CERCLA remedy. While community acceptance is an essential ingredient in making the final remedy selection, it is not always possible to accomplish all the community's goals. It is the Department of Defense's (DoD) responsibility to make the final remedy selection in accordance with applicable laws and requirements and to ensure that it will be protective of human health and the environment, as well as be compatible with, to the extent reasonably practicable, community reuse plans. This final remedy selection is formalized through the Record of Decision (ROD), which will be compatible with any ICs that may be implemented at the site.

## When the Selected Response Includes Institutional Controls

### 1 In a Team

When a selected response includes ICs, the team members (see box) involved in developing the future land use and evaluating the response should work together to establish and maintain the selected ICs. Requirements for establishment and maintenance of ICs vary from site to site and are dependent on the real property and environmental cleanup laws and regulations of that jurisdiction. Cooperation, therefore, is essential to achieve success. That success depends on building a team that will be effective in using the tools available at that site and in that location.

Team members already should be a part of the process through their participation in groups such as those listed in the box below. Key members of these existing entities (although others may be consulted as necessary) should be part of the team developing a plan for the success of ICs at that site. It is important to build a team that works together to ensure the success of the response action and the effective reuse of the land.

The Team	
Team Member	Potential Role in Establishing and Maintaining ICs
BRAC Cleanup Team	Identify the remaining contamination and associated risks at a site that requires ICs
Local Redevelopment Authority	Identify the intended use of the site consistent with the environmental condition of property that may require ICs; may assist in the establishment of ICs
Community Stakeholders (including the RAB)	Provide input and recommendations on establishing and maintaining ICs
Base Transition Coordinator	Facilitate the coordination of information for property reuse and transfer with cleanup activities, including establishment of ICs
Real Estate Attorney/Environmental Attorney	Develop deed language for restrictions; may assist in developing other ICs
Federal, State, and Local Government Officials	Establish, monitor, or enforce ICs
Identified Holders of Property Interest	Maintain a use of the site that is consistent with ICs



## A Guide to Establishing Institutional Controls At Closing Military Installations

### *Establish Cooperation*

Each success will be easier to achieve when the following commitments are made:

- The team makes a commitment to the success of ICs
- The team develops the skills needed to work together well
- Throughout the process, all team members make a commitment to open communication
- The team members maintain mutual trust, honor, and respect
- The team members accept responsibility, make decisions, take risks, and resolve issues
- The team makes decisions through consensus
- The team develops creative solutions and applies them to all problems
- The team maintains agreed-upon processes for resolving disagreements or disputes
- The team evaluates progress and recognizes successes

### *The Task of the Team*

This guide identifies issues that may be relevant to any number of response actions. It does not suggest how to resolve specific issues, but offers tools that the team may find useful. It is up to the team establishing the ICs to develop and implement a plan that uses these and other tools and the resources available to them at that site to create an effective remedy.

## Checklist of Issues and Tools To Be Considered When Establishing and Maintaining ICs

The following questions should be asked when DoD and stakeholders discuss how to establish and maintain ICs.

### *1. What are the ICs meant to accomplish?*

What types of reuse are possible, given the environmental condition of property and/or the planned remedial activities?  
For example:

#### TYPE(S) OF REUSE ALLOWED

- ☐ Residential
  - ☐ Housing
  - ☐ Daycare
  - ☐ Hospitals
  - ☐ Schools
  - ☐ Other
- ☐ Commercial
- ☐ Industrial
- ☐ Recreation
- ☐ Agricultural
- ☐ Other



What are the activities that must be restricted? For example:

#### SPECIFIC RESTRICTIONS

- ☐ Uses of ground and surface water
  - ☐ Prohibitions against drinking the water
  - ☐ Prohibitions against use of groundwater from existing wells
  - ☐ Prohibitions against any other use of the water (e.g., irrigation, watering livestock, or recreational uses, including fishing)
  - ☐ Restrictions to maintain the integrity of monitoring and reinjection wells
  - ☐ Other
- ☐ Use of soils
  - ☐ Prohibitions against excavation, construction, drilling, or disturbance of the soil (e.g., well installation that may connect an uncontaminated aquifer with a contaminated aquifer, or maintaining landfill cap)
  - ☐ Restrictions governing depth of excavation
  - ☐ Other
- ☐ Other ICs not directly related to the environmental response
  - ☐ Restrictions preserving historic or cultural areas
  - ☐ Restrictions protecting wildlife or wetlands
  - ☐ Restrictions governing access to the property (e.g., utility maintenance)

*Q. What are the techniques and tools available to establish and maintain ICs?*

#### TECHNIQUES: METHODS FOR ACCOMPLISHING THE GOALS OF THE ICs

- ☐ **Layering:** Layering means the use of a strategy to combine mutually reinforcing controls, for example, a combination of deed restrictions, physical barriers, and notice can expand the number of parties involved and strengthen the network that maintains the remedy and protects human health and the environment. Many tools can be used at the same time and at various levels to accomplish that result. Different team members may have methods available to them that enhance maintenance of the remedy.
- ☐ **Notice:** Providing notice that controls exist at a site is essential to maintain those controls and ensure that users of the property abide by them. The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.

*The more people who are aware of and responsible for an IC, the easier it is to ensure that the controls will be heeded and maintained.*

#### TOOLS: SPECIFIC ACTIONS THAT CAN BE USED TO IMPLEMENT THESE TWO TECHNIQUES

- ☐ **Deed Language:** Language in the deed is a good method of providing notice and generally will be an important part of any IC plan. The legal instrument and language used should be tailored to the requirements and processes that are best suited to the jurisdiction. The instrument, which may be separate from the deed, may be a covenant or easement or some other form of property right; however, before relying on any such right, the legality and enforceability of such a right in the jurisdiction must be determined. The legal instrument should provide a



## A Guide to Establishing Institutional Controls At Closing Military Installations

stand-alone explanation of the restrictions and should cite the portions of the administrative record, regulations, and transfer documents that are relevant to establishing the restrictions. Language providing notice and describing the restrictions may also be included in the transfer documents.

Depending on state law, which may vary, and depending on the intentions of the parties to the original transaction and third parties who hold an interest in the land, deed language can be structured to give enforcement rights to the previous owner and to those third parties. Deed restrictions implementing ICs should be structured to run with the land — in other words, to remain in force despite changes in ownership; for example, by stating that the restrictions benefit the surrounding property and benefit the general public, or by stating that the parties intend the ICs to run with the land and bind future parties. State laws vary and the enforceability of deed restrictions should be considered carefully in structuring deed language. The more stakeholders that have authority to enforce a deed restriction, the more effective it will be as a method of control. In spite of any legal limits on the enforceability of deed language, a deed restriction is an important form of notice.

- ☐ **Records and Community Involvement:** Other available methods of providing notice include the administrative record for the response action; local records like planning and zoning maps and subdivision plats; and similar state records and registries. Means of community education such as public meetings, recurring notices in— newspapers, and signs and fences also provide notice.
- ☐ **Federal, state, and local laws and regulations:** Statutory authority under CERCLA and the Resource Conservation and Recovery Act (RCRA) may provide Federal and state regulators direct legal authority to protect human health and the environment, prevent releases, or control site activities. State and local governments may also play a role through already existing legal frameworks or regulatory programs such as permitting the use of land, monitoring public health through public health statutes, authorizing zoning and land use plans, passing ordinances, and acting under established statewide environmental programs. Such legal avenues can be integrated into an IC plan and provide notice that activities at the site in question are restricted.
- ☐ **Inspections:** There may be inspections of the affected property associated with the selected remedy, generally as part of the remedy's operation and maintenance. Even though these inspections may not be intended for the purpose of monitoring an IC, they may provide an opportunity to assess activities at the site. For example, an inspection of monitoring wells may also provide an opportunity to establish compliance with an IC restricting excavation. Other existing inspection routines associated with regulatory programs not related to the remediation may also protect the site in question. While such inspections should not be confused with the ICs themselves, they can be used to assist in the maintenance of ICs. Such existing programs can be integrated into an IC plan in association with or in addition to the state and local laws and regulations listed above. The state and Federal members of the BCT may give the appropriate section or branch of the environmental regulatory agency or other pertinent agency notice of the IC or deed restriction by adding the organization's representative to the finding of suitability to transfer distribution list. In addition, the Federal government is required to review a remedy at least every five years, where contamination remains in place. Where ICs are part of the remedy, such reviews should include verification that the ICs are still in place and effective.
  - ☐ Remedy-specific environmental inspections (generally part of operation and maintenance of a remedy)
    - ☐ Inspections to ensure the integrity of the landfill cap
    - ☐ Inspections of the leachate treatment system
    - ☐ Inspections of the water treatment system
    - ☐ Other inspections required for operation and maintenance



- ☐ Other Federal, state, and local government inspections not directly related to the environmental response
  - ☐ Restrictions preserving historic or cultural areas
  - ☐ Restrictions protecting wildlife or wetlands
  - ☐ Restrictions governing access to the property (e.g., utility maintenance)
  - ☐ Restrictions concerning health
  - ☐ Restrictions concerning building standards
  - ☐ Other

*Q. What are the responsibilities to maintain and ensure the effectiveness of ICs?*

As a network for establishing an IC is created, it is also appropriate and necessary to discuss the associated responsibilities for maintaining its effectiveness. As previously noted, there are numerous existing statutory frameworks and regulatory programs at the Federal, state, and local levels that provide the authority to maintain the integrity of the remedy requirements. Stakeholders may need to discuss resources that are available or might be needed for certain ICs. They also need to discuss how long-term responsibilities for IC implementation at the site will be coordinated among team members.

- ☐ Statutory authority to enforce RCRA and CERCLA
- ☐ State and local, general or site-specific enforcement authorities that can be applied
  - ☐ Property laws
  - ☐ Zoning
  - ☐ Permitting programs
  - ☐ Other laws or ordinances
- ☐ Funding maintenance of the IC
- ☐ Long-term coordination responsibilities

*Q. How is an IC modified or terminated?*

ICs may also be modified or terminated over time. It is therefore useful to discuss what time frames, if known, and what procedures may be necessary for accomplishing these tasks. Due to the site-specific nature of IC plans, procedures for modifications to ICs may vary depending on that plan.

- ☐ Length of time ICs are needed
- ☐ Legal steps to remove or modify each IC
- ☐ Organizations that may be involved with modification or termination:
  - ☐ Federal government
  - ☐ State government
  - ☐ State court
  - ☐ Local government
  - ☐ Local court
  - ☐ Landowner
  - ☐ Adjacent landowner
  - ☐ Previous landowner



## Where to Learn More

Further information on this and other BRAC issues can be found by reading:

- DoD's Future Land Use Policy: *Responsibility for Additional Environmental Cleanup after Transfer of Real Property* (July 1997)
- BRAC Environmental Program Fact Sheet: *Institutional Controls: What They Are and How Are They Used* (Spring 1997)
- BRAC Environmental Program Fact Sheet: *A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations* (February 1996)
- *Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer* (Fall 1996)
- *Partnering Guide for Environmental Missions of the Air Force, Army, and Navy* (July 1996)

Or by contacting:

Office of the Assistant Deputy Under Secretary of Defense  
(Environmental Cleanup)  
Attn: Fast-Track Cleanup  
3400 Defense Pentagon  
Washington, D.C. 20301-3400

Or by looking on the World Wide Web at:

<http://www.dtic.mil/envirodod/envbrac.html>

For additional information about selection of response actions, see the following EPA Office of Solid Waste and Emergency Response (OSWER) documents:

- Land Use in CERCLA Remedy Selection Process, OSWER Publication Number PB95-963234NDZ (June 1995)
- Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions, OSWER Publication Number 9355.0-30 (April 1991)
- A Guide to Selecting Superfund Remedial Actions, OSWER Publication Number 9355.0-27FS (April 1990)

These are available on the World Wide Web at:

<http://www.epa.gov/epa/oswer>

The *Guide to Establishing Institutional Controls at Closing Military Installations* was prepared with input from an inter-agency work group made up of representatives of the Office of the Secretary of Defense, the DoD Components, the U.S. EPA, the General Services Administration, the California EPA, the National Association of Attorneys General, the International City/County Management Association, the National Association of Installation Developers, and others. This guide is not a formal statement of DoD policy, but is meant to assist in the establishment and maintenance of ICs at BRAC properties.

Local reproduction of this fact sheet is authorized and encouraged.



ACQUISITION AND  
TECHNOLOGY

THE UNDER SECRETARY OF DEFENSE  
3010 DEFENSE PENTAGON  
WASHINGTON, D.C. 20301-3010

JUL 25 1997



MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY  
(INSTALLATIONS, LOGISTICS AND ENVIRONMENT)  
ASSISTANT SECRETARY OF THE NAVY  
(INSTALLATIONS AND ENVIRONMENT)  
ASSISTANT SECRETARY OF THE AIR FORCE  
(MANPOWER, RESERVE AFFAIRS, INSTALLATIONS AND  
ENVIRONMENT)  
DEPUTY UNDER SECRETARY OF DEFENSE  
(ENVIRONMENTAL SECURITY)  
DEPUTY UNDER SECRETARY OF DEFENSE  
(INDUSTRIAL AFFAIRS AND INSTALLATIONS)  
DIRECTOR, DEFENSE LOGISTICS AGENCY (D)

SUBJECT: Responsibility for Additional Environmental Cleanup after Transfer of Real Property

The purpose of the attached policy is to describe the circumstances under which DoD would perform additional cleanup on DoD property that is transferred by deed to any person or entity outside the federal government. This policy is applicable to real property under DoD control that is to be transferred outside the federal government, and is effective immediately. For property that is transferred pursuant to section 120(h)(3)(C) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9620(h)(3)(C)), this policy applies after the termination of the deferral period.

DoD continues to be committed to a remedy selection process that provides for full protection of human health and the environment, even after property has been transferred by DoD. The Deputy Under Secretary of Defense (Environmental Security) will issue separately any specific guidance needed to implement this policy. This policy should be read to be compatible with and does not supersede other related DoD policies, and is to be incorporated in the next revision of the appropriate DoD Instruction. I ask for your support in implementing this policy and working with communities so that they can make informed decisions in developing their redevelopment plans.

R. Noel Longuemare  
Acting Under Secretary of Defense  
(Acquisition and Technology)

Attachment



**DoD Policy on Responsibility for Additional Environmental Cleanup  
After Transfer of Real Property**

Background. This policy is instituted within the framework established by land use planning practices and land use planning authorities possessed by communities, and the environmental restoration process established by statute and regulation. The land use planning and environmental restoration processes – two separate processes – are interdependent. Land use planners need to know the environmental condition of property in order to make plans for the future use of the land. Similarly, knowledge of land use plans is needed in order to ensure that environmental restoration efforts are focused on making the property available when needed by the community and that remedy selection is compatible with land use. This policy does not supplant either process, but seeks to integrate the two by emphasizing the need to integrate land use planning assumptions into the cleanup, and to notify the community of the finality of the cleanup decisions and limited circumstances under which DoD would be responsible for additional cleanup after transfer.

Cleanup Process. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 USC 9601 et seq.) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR 300) establish the requirements and procedures for the cleanup of sites that have been contaminated by releases of hazardous substances. CERCLA, furthermore, requires that a deed for federally owned property being transferred outside the government contain a covenant that all remedial action necessary to protect human health and the environment has been taken, and that the United States shall conduct any additional remedial action “found to be necessary” after transfer. Within the established restoration process, it is DoD’s responsibility, in conjunction with regulatory agencies, to select cleanup levels and remedies that are protective of human health and the environment. The environmental restoration process also calls for public participation, so that the decisions made by DoD and the regulatory agencies have the benefit of community input.

Land Use Assumptions in Cleanup Process. Under the NCP, future land use assumptions are developed and considered when performing the baseline risk assessment, developing remedial action alternatives, and selecting a remedy. The NCP permits other-than-residential land use assumptions to be considered when selecting cleanup levels and remedies, so long as selected remedies are protective of human health and the environment. The U.S. Environmental Protection Agency (EPA) further amplified the role of future land use assumptions in the remedy selection process in its May 25, 1995, “Land Use in the CERCLA Remedy Selection Process” directive (OSWER Directive No. 9355.7-04).

Development of Land Use Plans. By law, the local community has been given principal responsibility for reuse planning for surplus DoD property being made available at Base Realignment and Closure (BRAC) installations. That reuse planning and implementation authority is vested in the Local Redevelopment Authority (LRA) described in the DoD Base Reuse Implementation Manual (DoD 4165.66-M). The DoD Base Reuse Implementation Manual calls for the LRA to develop the community redevelopment plan to reflect the long term needs of the community. A part of the redevelopment plan is a “land use plan” that identifies the proposed land use for given portions of the surplus DoD property. The DoD is committed to working with local land use planning authorities, local government officials, and the public to develop realistic assumptions concerning the future use of property that will be transferred by DoD. The DoD will act on the expectation that the community land use plan developed by the LRA reflects the long-range regional needs of the community.



Use of Land Use Assumptions in the Cleanup Process. DoD environmental restoration efforts for properties that are to be transferred out of federal control will attempt, to the extent reasonably practicable, to facilitate the land use and redevelopment needs stated by the community in plans approved prior to the remedy selection decision. For BRAC properties, the LRA's redevelopment plan, specifically the land use plan, typically will be the basis for the land use assumptions DoD will consider during the remedy selection process. For non-BRAC property transfers, DoD environmental restoration efforts will be similarly guided by community input on land use, as provided by the local government land use planning agency. In the unlikely event that no community land use plan is available at the time a remedy selection decision requiring a land use assumption must be made, DoD will consider a range of reasonably likely future land uses in the remedy selection process. The existing land use, the current zoning classification (if zoned by a local government), unique property attributes, and the current land use of the surrounding area all may serve as useful indicators in determining likely future land uses. These likely future land uses then may be used for remedy selection decisions which will be made by DoD (in conjunction with regulatory agencies) in accordance with CERCLA and the NCP.

DoD's expectation is that the community at-large, and in particular the land use planning agency, will take the environmental condition of the property, planned remedial activities, and technology and resource constraints into consideration in developing their reuse plan. The February 1996 "Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations" provides a useful tool for considering various possible land uses and remedy alternatives, so that cost and time implications for both processes can be examined and integrated. Obviously, early development of community consensus and publication of the land use plan by the LRA or the land planning agency will provide the stability and focus for DoD cleanup efforts.

Applicable guidelines in EPA's May 25, 1995, "Land Use in the CERCLA Remedy Selection Process" Directive should be used in developing cleanup decisions using land use assumptions. For a remedy that will require restrictions on future use of the land, the proposed plan and record of decision (ROD) or other decision documents must identify the future land use assumption that was used to develop the remedy, specific land use restrictions necessitated by the selected remedy, and possible mechanisms for implementing and enforcing those use restrictions. Examples of implementation and enforcement mechanisms include deed restrictions, easements, inspection or monitoring, and zoning. The community and local government should be involved throughout the development of those implementation and enforcement mechanisms. Those mechanisms must also be valid within the jurisdiction where the property is located.

Enforcement of Land Use Restrictions. The DoD Component disposal agent will ensure that transfer documents for real property being transferred out of federal control reflect the use restrictions and enforcement mechanisms specified in the remedy decision document. The transfer document should also include a description of the assumed land use used in developing the remedy and the remedy decision. This information required in the transfer documents should be provided in the environmental Finding Of Suitability to Transfer (FOST) prepared for the transfer. The DoD Component disposal agent will also ensure that appropriate institutional controls and other implementation and enforcement mechanisms, appropriate to the jurisdiction where the property is located, are either in-place prior to the transfer or will be put in place by the transferee as a condition of the transfer. If it becomes evident to the DoD Component that a deed restriction or other institutional control is not being followed, the DoD Component will attempt to ensure that appropriate actions are taken to enforce the deed restriction.

The DoD expects the transferee and subsequent owners to abide by restrictions stated in the transfer documents. The DoD will reserve the right to enforce deed restrictions and other institutional controls, and the disposal agent will ensure that such language is also included in the transfer documents. If DoD becomes aware of action or inaction by any future owner that will cause or threaten to cause a

release or cause the remedy not to perform effectively, DoD also reserves the right to perform such additional cleanup necessary to protect human health and the environment and then to recover costs of such cleanup from that owner under the terms of the transfer document or other authority.

Circumstances Under Which DoD Would Return to do Additional Cleanup. A determination may be made in the future that the selected remedy is no longer protective of human health and the environment because the remedy failed to perform as expected, or because an institutional control has proven to be ineffective, or because there has been a subsequent discovery of additional contamination attributable to DoD activities. This determination may be made by DoD as a part of the remedy review process, or could be a regulatory determination that the remedy has failed to meet remediation objectives. In these situations, the responsible DoD Component disposing of the surplus property will, consistent with CERCLA Section 120(h), perform such additional cleanup as is both necessary to remedy the problem and consistent with the future land use assumptions used to determine the original remedy. Additionally, after the transfer of property from DoD, applicable regulatory requirements may be revised to reflect new scientific or health data and the remedy put in place by DoD may be determined to be no longer protective of human health and the environment. In that circumstance, DoD will likewise, consistent with CERCLA Section 120(h), return to perform such additional cleanup as would be generally required by regulatory agencies of any responsible party in a similar situation. Also note that DoD has the right to seek cost recovery or contribution from other parties for additional cleanup required for contamination determined not to have resulted from DoD operations.

Circumstance Under Which DoD Would Not Return to do Additional Cleanup. Where additional remedial action is required only to facilitate a use prohibited by deed restriction or other appropriate institutional control, DoD will neither perform nor pay for such additional remedial action. It is DoD's position that such additional remedial action is not "necessary" within the meaning of CERCLA Section 120(h)(3). Moreover, DoD's obligation to indemnify transferees of closing base property under Section 330 (of the Fiscal Year 1993 Defense Authorization Act) would not be applicable to any claim arising from any use of the property prohibited by an enforceable deed restriction or other appropriate institutional control.

Changes to Land Use Restrictions after Transfer. Deed restrictions or other institutional controls put in place to ensure the protectiveness of the remedy may need to be revised if a remedy has performed as expected and cleanup objectives have been met. For example, the specified groundwater cleanup levels have been reached after a period of time. In such a case, the DoD Component disposing of the surplus property will initiate action to revise the deed restrictions or other institutional controls, as appropriate.

DoD will also work cooperatively with any transferee of property that is interested in revising or removing deed restrictions in order to facilitate a broader range of land uses. Before DoD could support revision or removal, however, the transferee would need to demonstrate to DoD and the regulators, through additional study and/or remedial action undertaken and paid for by the transferee, that a broader range of land uses may be undertaken consistent with the continued protection of human health and the environment. The DoD Component, if appropriate, may require the transferee to provide a performance bond or other type of financial surety for ensuring the performance of the additional remedial action. The transferee will need to apply to the DoD Component disposal agent for revision or removal of deed restrictions or other institutional controls. Effective immediately, the process for requesting the removal of such restrictions by a transferee should be specified by the disposal agent in the documents transferring property from DoD.

Making those revisions or changes will be considered by DoD to be an amendment of the remedy decision document. Such an amendment will follow the NCP process and require the participation by DoD and regulatory agencies, as well as appropriate public input.

Disclosure by DoD on Using Future Land Use in Remedy Selection. A very important part of this policy is that the community be informed of DoD's intent to consider land use expectations in the remedy selection process. At a minimum, disclosure shall be made to the Restoration Advisory Board (or other similar community group), the LRA (if BRAC) or other local land use planning authority, and regulatory agencies. The disclosure to the community for a specific site shall clearly communicate the basis for the decision to consider land use, any institutional controls to be relied upon, and the finality of the remedy selection decision, including this policy. In addition, any public notification ordinarily made as part of the environmental restoration process shall include a full disclosure of the assumed land use used in developing the remedy selected.

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# A Citizen's Guide to Natural Attenuation

Technology Innovation Office

Technology Fact Sheet

## What is natural attenuation?

Natural attenuation makes use of natural processes to contain the spread of contamination from chemical spills and reduce the concentration and amount of pollutants at contaminated sites. Natural attenuation—also referred to as *intrinsic remediation*, *bioattenuation*, or *intrinsic bioremediation*—is an *in situ* treatment method. This means that environmental contaminants are left in place while natural attenuation works on them. Natural attenuation is often used as one part of a site cleanup that also includes the control or removal of the source of the contamination.

## How does natural attenuation work?

The processes contributing to natural attenuation are typically acting at many sites, but at varying rates and degrees of effectiveness, depending on the types of contaminants present, and the physical, chemical and biological characteristics of the soil and ground water. Natural attenuation processes are often categorized as *destructive* or *non-destructive*. Destructive processes destroy the contaminant. Non-destructive processes do not destroy the contaminant but cause a reduction in contaminant concentrations.

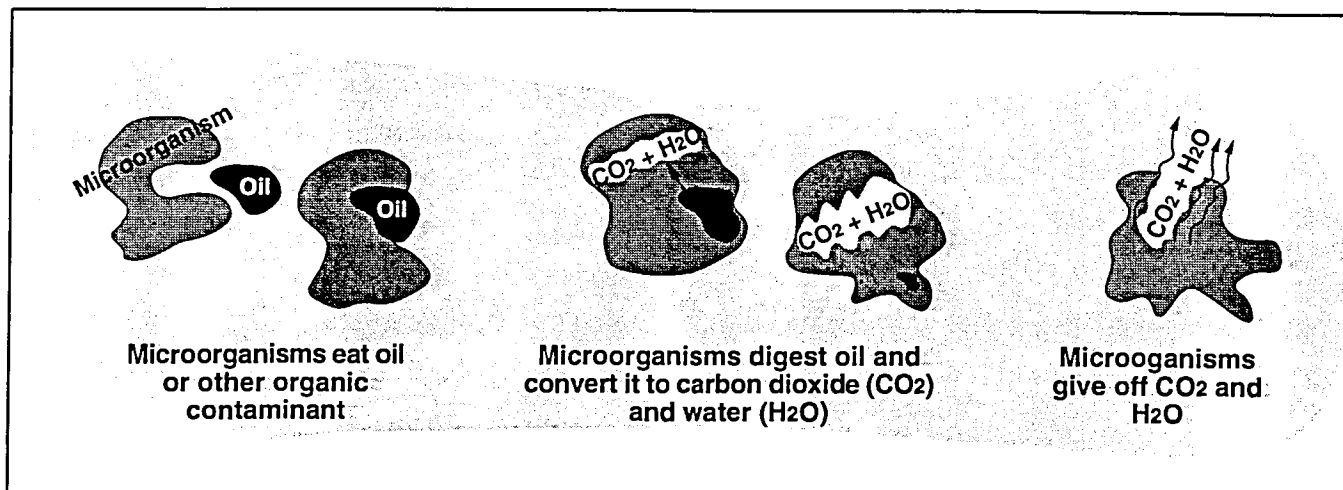
Natural attenuation processes may reduce contaminant mass (through destructive processes such as **bio-degradation** and chemical transformations); reduce contaminant concentrations (through simple **dilution** or **dispersion**); or bind contaminants to soil particles so the contamination does not spread or migrate very far (**adsorption**).

**Biodegradation**, also called bioremediation, is a process in which naturally occurring microorganisms (yeast, fungi, or bacteria) break down, or *degrade*, hazardous substances into less toxic or nontoxic substances. Microorganisms, like humans, eat and digest organic substances for nutrition and energy. (In chemical terms, “organic” compounds are those that contain carbon and hydrogen atoms.) Certain microorganisms can digest organic substances such as fuels or solvents that are hazardous to humans. Biodegradation can occur in the presence of oxygen (aerobic conditions) or without oxygen (anaerobic conditions). In most subsurface environments, both aerobic and anaerobic biodegradation of contaminants occur. The microorganisms break down the organic contaminants into harmless products—mainly carbon dioxide and water in the case of aerobic biodegradation (Figure 1). Once the contaminants are degraded, the

### A Quick Look at Natural Attenuation

- Uses naturally occurring environmental processes to clean up sites.
- Is non-invasive and allows the site to be put to productive use while being cleaned up.
- Requires careful study of site conditions and monitoring of contaminant levels.

Figure 1. Schematic Diagram of Aerobic Biodegradation in Soil



microorganism populations decline because they have used their food sources. Dead microorganisms or small populations in the absence of food pose no contamination risk. The fact sheet entitled *A Citizen's Guide to Bioremediation* describes the process in detail (see page 4).

Many organic contaminants, like petroleum, can be biodegraded by microorganisms in the underground environment. For example, biodegradation processes can effectively cleanse soil and ground water of hydrocarbon fuels such as gasoline and the BTEX compounds—benzene, toluene, ethylbenzene, and xylenes. Biodegradation also can break down chlorinated solvents, like trichloroethylene (TCE), in ground water but the processes involved are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Chlorinated solvents, widely used for degreasing aircraft engines, automobile parts, and electronic components, are among the most often-found organic ground-water contaminants. When chlorinated compounds are biodegraded, it is important that the degradation be complete, because some products of the breakdown process can be more toxic than the original compounds.

The effects of **dilution** and **dispersion** appear to reduce contaminant concentration but do not destroy the contaminant. Relatively clean water from the ground surface can seep underground to mix with and dilute contaminated ground water. Clean ground water from an underground location flowing into

contaminated areas, or the dispersion of pollutants as they spreading out away from the main path of the contaminated plume also lead to a reduced concentration of the contaminant in a given area.

**Adsorption** occurs when contaminants attach or *sorb* to underground particles. Fuel hydrocarbons tend to repel water, as most oily substances do. When they have an opportunity to escape from the ground water by attaching to organic matter and clay minerals that also repel water, they do so. This is beneficial because it may keep the contaminants from flowing to an area where they might be a health threat. Sorption, like dilution and dispersion, appears to reduce the concentration and mass of contamination in the ground water, but does not destroy the contaminants.

### Why consider natural attenuation?

In certain situations, natural attenuation is an effective, inexpensive cleanup option and the most appropriate way to remediate some contamination problems. Natural attenuation is sometimes mislabeled as a "no action" approach. However, natural attenuation is really a proactive approach that focuses on the confirmation and monitoring of natural remediation processes rather than relying totally on "engineered" technologies. Mobile and toxic fuel hydrocarbons, for example, are good candidates for natural attenuation. Not only are they difficult to trap because of their mobility, but they are also among the contaminants most easily destroyed by biodegradation. Natural attenuation is non-invasive, and, un-

like many elaborate mechanical site cleanup techniques, while natural attenuation is working below ground, the land surface above ground may continue to be used. Natural attenuation can be less costly than other active engineered treatment options, especially those available for ground water, and requires no energy source or special equipment.

### **Will natural attenuation work at every site?**

To estimate how well natural attenuation will work and how long it will take requires a detailed study of the contaminated site. The community and those conducting the cleanup need to know whether natural attenuation, or any proposed remedy, will reduce the contaminant concentrations in the soil and water to legally acceptable levels within a reasonable time.

Natural attenuation may be an acceptable option for sites that have been through some active remediation which has reduced the concentrations of contaminants. However, natural attenuation is not an appropriate option at all sites. The rates of natural processes are typically slow. Long-term monitoring is necessary to demonstrate that contaminant concentrations are continually decreasing at a rate sufficient to ensure that they will not become a health threat. If not, more aggressive remedial alternatives should be considered.

### **What Is An Innovative Treatment Technology?**

*Treatment technologies* are processes applied to the treatment of hazardous waste or contaminated materials to permanently alter their condition through chemical, biological, or physical means.

*Innovative treatment technologies* are those that have been tested, selected or used for treatment of hazardous waste or contaminated materials but lack well-documented cost and performance data under a variety of operating conditions.

Because the ability of natural attenuation to be an effective cleanup method depends on a variety of conditions, the site needs to be well-characterized to determine if natural attenuation is occurring or will occur. Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands often provide successful conditions for natural attenuation. Certain geological formations such as fractured bedrock aquifers or limestone areas are less likely candidates for natural attenuation because these environments often have a wide variety of soil types that cause unpredictable ground water flow and make predicting the movement of contamination difficult.

### **Where is natural attenuation being used?**

Natural attenuation is being used to clean up petroleum contamination from leaking underground storage tanks across the country.

Within the Superfund program, natural attenuation has been selected as one of the cleanup methods at 73 ground-water-contaminated sites—but is the sole treatment option at only six of these sites. Some of these sites include municipal and industrial land fills, refineries, and recyclers.

At the Allied Signal Brake Systems Superfund site in St. Joseph, Michigan, microorganisms are effectively removing TCE and other chlorinated solvents from ground water. Scientists studied the underground movement of TCE-contaminated ground water from its origin at the Superfund site to where it entered Lake Michigan about half a mile away. At the site itself, they measured TCE concentrations greater than 200,000 micrograms per liter ( $\mu\text{g/L}$ ), but by the time the plume reached the shore of Lake Michigan, the TCE was one thousand times less—only  $200\mu\text{g/L}$ . About 300 feet offshore in Lake Michigan, the concentrations were below EPA's allowable levels. EPA estimated the plume took about 20 years to move from the source of contamination to Lake Michigan—plenty of time for the microorganisms naturally present in the ground water to destroy the TCE without any outside intervention. In fact, microorganisms were destroying about 600 pounds of TCE a year at no cost to taxpayers. EPA determined that nature adequately remediated the TCE plume in St. Joseph.

## For More Information

The publications listed below can be ordered free of charge by faxing your request to NCEPI at 513-489-8695. If NCEPI is out of stock of a document, you may be directed to other sources. Some of the documents listed also can be downloaded free of charge from EPA's Cleanup Information (CLU-IN) World Wide Web site (<http://clu-in.com>) or electronic bulletin board (301-589-8366). The CLU-IN help line number is 301-589-8368.

You may write to NCEPI at:

National Center for Environmental Publications and Information (NCEPI)  
P.O. Box 42419  
Cincinnati, OH 45242

- *A Citizen's Guide to Bioremediation*, April 1996, EPA 542-F-96-007.
- *Symposium on Intrinsic Bioremediation of Ground Water*, August 1994, EPA 540-R-94-515.
- *Bioremediation Research: Producing Low-Cost Tools to Reclaim Environments*, September 1995, EPA 540-R-95-523a.
- "Natural Bioremediation of TCE," *Ground Water Currents* (newsletter), September 1993, EPA 542-N-93-008.
- "Innovative Measures Distinguish Natural Bioattenuation from Dilution/Sorption," *Ground Water Currents* (newsletter), December 1992, EPA 542-N-92-006.
- *How to Evaluate Alternative Cleanup Technologies for UST Sites*, (Chapter on Natural Attenuation), May 1995, EPA 510-B-95-007.
- *Bioremediation Resource Guide*, September 1993, EPA 542-B-93-004. **A bibliography of publications and other sources of information about bioremediation technologies.**
- *Engineering Bulletin: In Situ Biodegradation Treatment*, April 1994, EPA 540-S-94-502.
- *Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation: A Bibliography of EPA Information Sources*, January 1995, EPA 542-B-95-001. **A bibliography of EPA publications about innovative treatment technologies.**
- *WASTECH® Monograph on Bioremediation*, ISBN #1-883767-01-6. Available for \$49.95 from the American Academy of Environmental Engineers, 130 Holiday Court, Annapolis, MD 21401. Telephone 410-266-3311.

**NOTICE:** This fact sheet is intended solely as general guidance and information. It is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States. The Agency also reserves the right to change this guidance at any time without public notice.



# COMMONLY ASKED QUESTIONS REGARDING THE USE OF NATURAL ATTENUATION FOR CHLORINATED SOLVENT SPILLS AT FEDERAL FACILITIES

*This brochure was developed through a partnership  
among the U.S. EPA, Air Force, Army, Navy, and Coast Guard.*

## *Do federal, state, and local regulations allow natural attenuation as an option for remediation of chlorinated solvents?*

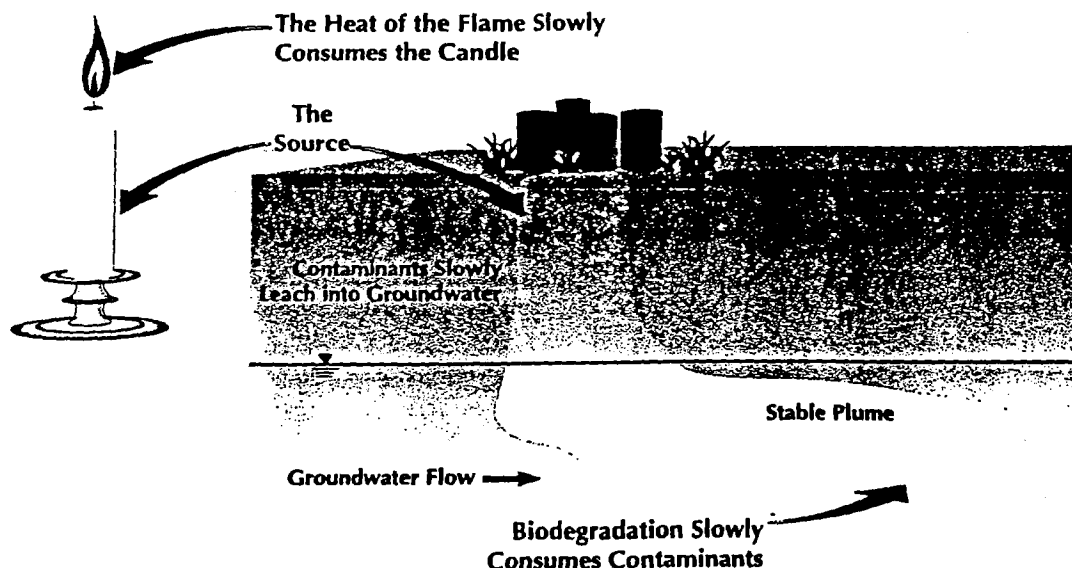
Natural attenuation is recognized by the EPA as a viable method of remediation for soil and groundwater that can be evaluated and compared to other methods of achieving site remediation as a part of the remedy selection process. The selection of natural attenuation as a component of any site remedy should be based on its ability to achieve remediation goals in a reasonable timeframe and protect human health and the environment. EPA recognition of natural attenuation extends to sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Resource Conservation and Recovery Act (RCRA); and underground storage tank (UST) regulations. Natural attenuation is not a default option or a "presumptive remedy." As with any remedy, it must comply with state groundwater use classifications and standards.

***"Under certain site conditions, and if properly documented, natural attenuation can be a viable option for remediating sites as a stand-alone option or in conjunction with other engineered remediation." Jim Woolford, Director, EPA's Federal Facilities Restoration and Reuse Office***

## *What is natural attenuation?*

When chlorinated solvents such as trichloroethene (TCE) or perchloroethene (PCE) are spilled or leak into the soil or groundwater, several natural processes can occur to destroy or alter these chemicals. These processes, known collectively as natural attenuation, include adsorption to soil particles, biodegradation of contaminants, and dilution and dispersion in groundwater. Many contaminants are prevented from migrating off the site because they are adsorbed to soil particles. Although biodegradation does not occur at all chlorinated solvent sites, it can be an important process in destroying these contaminants. Dilution and dispersion do not destroy contaminants, but can significantly reduce their potential risk at many sites.

"Intrinsic" and "passive" remediation are other terms which have been used to describe the combined effect of these processes. Dr. John Wilson of the EPA compares natural attenuation in groundwater to the flame of a candle. The source of the flame is the wax of the candle just as the source of the groundwater contamination is the concentrated solvents trapped in the soil. The flame appears steady because the wax is destroyed in the flame as fast as it is removed from the candle. In the same way, many groundwater plumes will reach "steady state" at some distance from the source, when biological reactions are able to destroy contaminants as they enter the groundwater from the soil. Eventually, the candle is consumed by the flame just as the contaminants in the soil and groundwater can be attenuated through biodegradation and other natural processes.



## *How is natural attenuation different from the "do nothing" approach?*

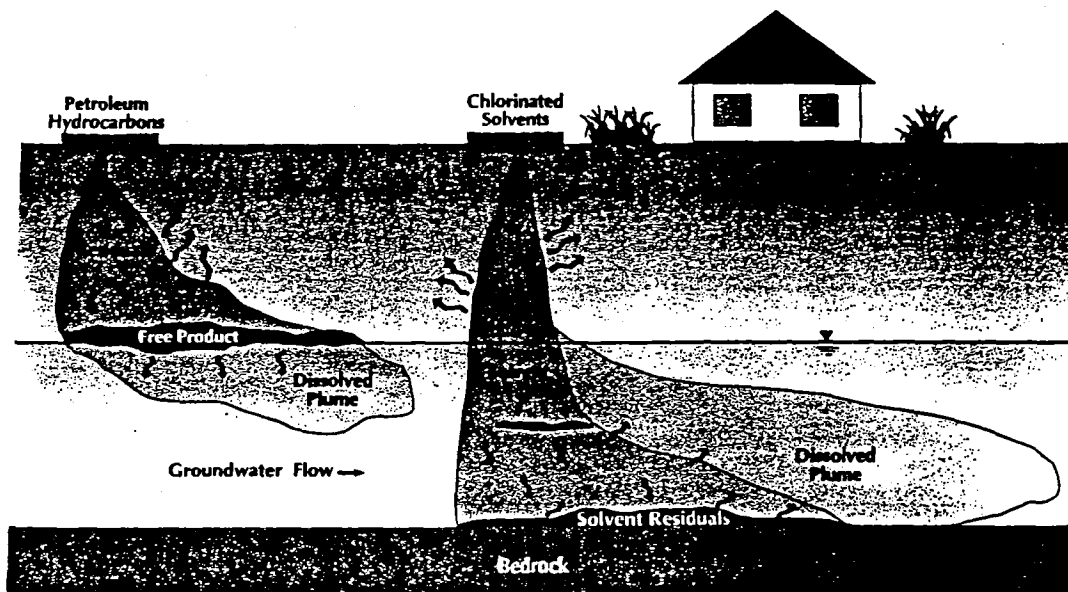
Natural attenuation is sometimes mislabeled as the "do nothing" or "walk away" approach to site cleanup. The truth is that natural attenuation is a proactive approach that focuses on the verification and monitoring of natural remediation processes rather than relying totally on "engineered" processes.

Before natural attenuation can be proposed for any site, significant soil and groundwater data must be collected and evaluated to document that natural attenuation is occurring and to estimate the effectiveness of natural processes in reducing contaminant concentrations over time. If natural attenuation is selected as the preferred site remedy, the party responsible for site cleanup must commit to long-term monitoring to verify that the contaminants pose no risk to human health or the environment and that natural processes are reducing contaminant levels and risk as predicted. Land use and groundwater use are generally controlled on these sites to prevent human exposure to contaminants.

## *How does natural attenuation of chlorinated solvents differ from natural attenuation of petroleum products such as fuels?*

Because chlorinated solvents are synthetic chemicals, they tend to be more resistant to natural biodegradation processes. However, significant evidence now exists that biochemical reactions can also break down chlorinated compounds in the soil and groundwater. These processes are harder to predict and are effective at a smaller percentage of sites compared to petroleum-contaminated sites. Despite these limitations, significant progress has been made in understanding the fate and transport of chlorinated solvents and the role of natural attenuation.

Chlorinated solvents also migrate differently than petroleum hydrocarbons. Because chlorinated compounds have a greater density than water, they tend to sink rapidly into the aquifer. When large quantities of solvent are released, they will sink until they encounter an impermeable layer where they form small pools which serve as a long-term source of groundwater contamination. These untreated sources dissolve slowly over time, contaminating large volumes of water.



## *How can you tell if natural attenuation may work at a site?*

Experts in the science of natural attenuation have identified several good indicators or lines of evidence that can be used to prove that natural processes are reducing contaminant concentrations. The following lines of evidence are useful in documenting the natural attenuation of chlorinated solvents:

- Historical trends indicating a decrease in contaminant concentrations, as well as a stable or retreating plume. A stable or retreating plume generally indicates that contaminants are being destroyed as fast as they are dissolved into the groundwater.
- Favorable geochemical conditions. Biological reactions will change the chemical composition of the groundwater. One condition which is particularly favorable for chlorinated solvent destruction occurs in groundwater that has been completely depleted of oxygen and nitrate. Depleted levels of sulfate and elevated levels of dissolved methane are also favorable conditions.
- Breakdown or "daughter" products. Chlorinated solvents are often destroyed by biochemical reactions which remove one chlorine atom at a time from the "parent" or original solvent. When these breakdown products are detected in the groundwater, it provides evidence that contaminant destruction is underway. It is important for biodegradation to be complete, because some breakdown products may be more toxic than parent compounds.
- Laboratory "microcosm" studies. These studies can be used to simulate aquifer conditions and to demonstrate that native bacteria can create the necessary biochemical reactions to destroy contaminants of concern. This technique is sometimes required for chlorinated solvent sites because the biochemical reactions are more complex and more difficult to predict than reactions on petroleum-contaminated sites.

The Air Force Center for Environmental Excellence is developing a comprehensive natural attenuation protocol (Draft Technical Protocol for Natural Attenuation of Chlorinated Solvents in Groundwater) for chlorinated solvent sites. This document describes how this evidence can be collected during site investigation activities and how it can be interpreted to estimate the contribution of natural attenuation in the remediation process.

### ***Will natural attenuation be effective on all chlorinated sites?***

Definitely not. Some chlorinated solvent contamination has impacted large quantities of groundwater which will be required for some beneficial use. There are risks associated with the continued migration of these plumes into public drinking water supplies and some form of engineered remediation is needed at these sites. On sites where no current risk to public health or the environment exists, natural attenuation can play an important role in reducing future risk if institutional controls (e.g., deed restrictions and zoning ordinances) can be implemented. Scientists are beginning to observe certain site profiles where natural attenuation has a higher probability of being integrated into the remediation process. These include:

- Sites where chlorinated solvents are spilled with other petroleum compounds (the best biochemical reactions for degradation are produced).
- Sites where the soil contains high levels of natural organic matter, such as swampy areas or former marshlands.
- Sites where shallow (unused) groundwater is separated from deeper groundwater by a thick, low-permeability clay layer.
- Sites where there is little or no source remaining due to active remediation.

### ***Why are chlorinated solvent spills so common at federal facilities?***

Chlorinated solvents were developed as superior cleaning solutions for removing grease and carbon buildup from metal parts. For over 40 years they were widely used by U.S. industry and the federal government for a variety of equipment cleaning tasks.

Prior to environmental laws restricting their use, these compounds were often stored in drums or underground storage tanks and disposed of in the sanitary sewer, in evaporation ponds, or mixed with fuels and burned. These solvents have created significant groundwater contamination at many federal facilities. Since 1976, when RCRA was established, the use and disposal of these solvents have been carefully regulated and many chlorinated solvents have been replaced with less harmful substitutes.

### ***Can natural attenuation achieve site cleanup goals?***

Natural attenuation may be effective in achieving cleanup goals at some sites, particularly when these goals are based on site-specific risk reduction. For example, if contaminant migration is limited to shallow groundwater, and groundwater use can be controlled, natural attenuation may eventually achieve cleanup goals on some sites. However, natural attenuation is more likely to play a role in cleaning up a portion of a chlorinated site. Natural attenuation is more likely to clean up areas that have lower levels of contamination. Such areas are normally found outside of highly contaminated source areas, or at sites with relatively small source areas.

### ***What are some of the potential advantages and limitations of natural attenuation?***

#### **Potential Advantages**

- ✔ Less generation or transfer of wastes.
- ✔ Less intrusive and disruptive than engineered methods.
- ✔ Can be combined with active remedial measures or used to remediate a portion of the site.
- ✔ Remediation costs may be lower than with active remediation.

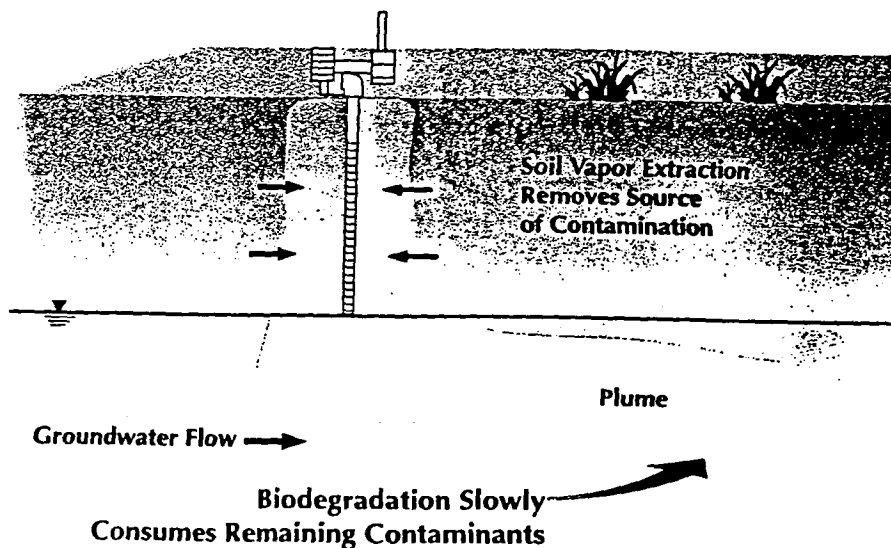
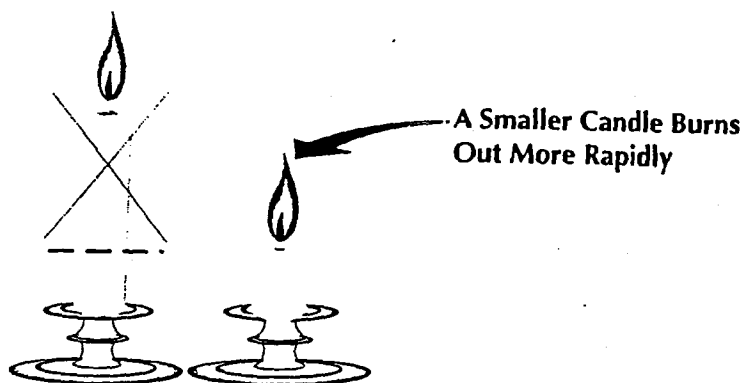
#### **Potential Limitations**

- ✔ May require more time to achieve cleanup goals and requires a commitment to long-term monitoring. On some sites, long-term monitoring costs can be excessive.
- ✔ If natural attenuation rates are too slow, the plume could continue to migrate.
- ✔ Incomplete biodegradation can create new, more toxic contaminants.
- ✔ Land and groundwater use controls are often required.

## *Can natural attenuation processes be enhanced to speed up the cleanup process?*

Natural attenuation may be successfully combined with other remediation techniques to achieve cleanup goals within a reasonable time frame. Engineered approaches that may be used in conjunction with natural attenuation include hydraulic containment, soil vapor extraction, source removal, and pump-and-treat methods. In addition, non-toxic organic compounds may be added to enhance the breakdown of contaminants.

Again, the candle provides a useful illustration of how active and natural remediation can be combined. If the top of the candle (the source) is cut off and removed, the flame (plume) will exist for only a fraction of the original time. Soil vapor extraction, free product recovery, soil excavation, and groundwater extraction in the source area are all methods of reducing or containing the source of solvent contamination. The rate at which the candle burns can also be increased by improving the conditions for combustion. As mentioned previously, many chlorinated solvents actually degrade faster in the absence of oxygen under anaerobic conditions. Researchers are now developing methods of adding highly biodegradable organic compounds to increase the natural bacteria population in the groundwater which will consume available oxygen and create these favorable conditions. Regardless of whether an engineered remediation or natural attenuation is used, controls on groundwater use will be required on most chlorinated solvent sites.



*This brochure was developed through a partnership among the U.S. EPA, Air Force, Army, Navy, and Coast Guard. If you would like additional information about natural attenuation and its application at federal facilities, you may fax your request to the National Center for Environmental Publications and Information at (513) 489-8695 or contact the following agency home pages on the Internet:*

EPA - <http://www.epa.gov>

Air Force - <http://www.afcee.brooks.af.mil>

Army - <http://aec-www.apgea.army.mil:8080>

Navy - <http://www.nfesc.navy.mil>

Coast Guard - <http://www.dot.gov/dotinfo/uscg>

## *What if natural attenuation does not work at a site?*

As with any remedy, if monitoring results indicate inadequate progress, it will be necessary to reevaluate the remedial action plan. If this occurs, the remediation project manager would consider implementing an engineered approach for all or part of the plume.





# Superfund Today

FOCUS ON FIVE-YEAR REVIEWS AND INVOLVING THE COMMUNITY

## Checking Up On Superfund Sites: The Five-Year Review

The U.S. Environmental Protection Agency (EPA) conducts regular checkups, called five-year reviews, on certain Superfund sites. EPA looks at sites where cleanup left wastes that limit site use. For example, EPA will look at a landfill to make sure the protective cover is not damaged and is working properly. EPA will also review sites with cleanup activity still in progress after five years.

In both cases, EPA checks the site to make sure the cleanup continues to protect people and the environment. The EPA review team conducts the review, asks and answers questions, and writes a report on the results of the review. At some sites, other Federal agencies, a State agency, or an Indian Tribe may do the review, but EPA stays involved in the process and approves the report.

### The Five-Year Review is:

- a regular EPA checkup on a Superfund site that has been cleaned up—but waste was left behind—to make sure the site is still safe;
- a way to make sure the cleanup continues to protect people and the environment; and
- a chance for you to tell EPA about site conditions and any concerns you have.

During the review, EPA studies information on the site, including the cleanup and the laws that apply, and inspects the site to make sure it continues to be safe. EPA also needs information from people who are familiar with the site. As someone living close to the site, you may know about things that can help the review team decide if the site is still safe. Here are some examples of things to tell EPA about:

- Broken fences, unusual odors, dead plants, materials leaving the site, or other problems;
- Buildings or land around the site being used in new ways;
- Any unusual activities at the site, such as dumping, vandalism, or trespassing; and
- Ways the cleanup at the site has helped the area.

### For More Information ...

... about a Superfund site in your neighborhood, please call the toll-free **Superfund/RCRA Hotline** at 1-800-424-9346 or the Community Involvement Coordinator in the EPA regional office for your state. Your local EPA office can tell you where you can go to review files on every Superfund site in your area. Often, EPA holds community meetings to let people who live near a site know about site activities. You also may find useful information on the Superfund home page ([www.epa.gov/superfund](http://www.epa.gov/superfund)). More information about the five-year review process can be found in the document, "Comprehensive Five Year Review Guidance," EPA 540-R-01-007, OSWER 9355.7-03B-P, June 2001.

## **The Five-Year Review:**

### ***Continuing to Protect You and the Environment***

## **Step 1: Develop Plan**

To plan a five-year review, the site manager forms a review team, which may include an EPA Community Involvement Coordinator, scientists, engineers, and others. The team members decide what they will do at the site and when they will do it. The Community Involvement Coordinator is the member of the team who works with your community during the review.

**Your role:** EPA will announce the start of the review, probably through a notice in a newspaper or a flyer. Review the notice to see when the review will start.

## **Step 2: Collect Information**

The review team members collect information about site cleanup activities. They talk with people who have been working at the site over the past five years, as well as local officials, to see if changes in local policy or zoning might affect the original cleanup plan. The team usually visits the site to see if the cleanup equipment is working properly, to take new samples, and to review records of activities at the site to make sure the cleanup is still effective. Finally, the review team may talk to people who live or work near the site to learn about site activities during the past five years. They may give you a call or meet with you in person.

**Your role:** If you know anything about unusual site activities at or around the site, such as trespassing or odors, or have any other concerns, call the Community Involvement Coordinator.

## **Step 3: Ensure Safety, Announce Findings, and Publish Report**

The review team uses the information collected to decide if your community and the environment are still safe from the contaminated material left at the site. If the cleanup activities are keeping people and the environment safe, the team calls them "protective." When cleanup goals are not being met, or when problems come up, the review team will call the cleanup activities "not protective." When the team finishes the five-year review, it writes a report about the information that includes background on the site and cleanup activities, describes the review, and explains the results. The review team also writes a summary and announces that the review is finished. They tell your community (via public notices, flyers, etc.) where to find copies of the report and summary—at a central place called the site repository—for anyone to see.

**Your role:** Read about the site and learn about the cleanup methods being reviewed. Review the report. Ask the Community Involvement Coordinator any questions you have about the site.

## **What Happens After The Review?**

As long as contaminated materials at the site stop people from freely using the land, EPA will do a review every five years. EPA also regularly monitors the site based on an operations and maintenance plan they develop. For example, the site manager may visit the site and read reports about activities at the site. Also, site workers may visit the site to cut the grass, take samples, or make sure equipment is working. If you see any problems or things that concern you—don't wait for the five-year review—let EPA know right away.



## **MCAS El Toro State of the Station Environmental Program**

**73<sup>rd</sup> Restoration Advisory Board Meeting**

*Andy Piszkin*

*Base Realignment and Closure  
(BRAC) Environmental Coordinator*

*26 Jan 2005*



## **Vision & Mission Statements**



### **•Vision:**

**–Expedite restoration and reuse of Marine Corps  
Air Station (MCAS) El Toro.**

### **•Mission:**

**–Fast-track remediation of MCAS El Toro, to  
promote reuse and protect human health and the  
environment, by working cooperatively with the  
BRAC Cleanup Team (BCT), the community, and  
the stakeholders.**



## Program Activities



- **Installation Restoration Projects (Site-specific)**
  - Landfills
  - Shallow Soils
  - Groundwater
  - No Further Action
- **Global Projects (Station-wide)**
  - Groundwater Monitoring
  - Radiological Release
  - Compliance Program
- **Promote Reuse (Property Transfer)**
  - Environmental Baseline Survey (EBS)
  - Finding of Suitability to Transfer (FOST) and Lease (FOSL)
  - Redevelopment within Carve-outs, Environmental Requirements
- **Funding**



## Sites 3, 5 & AA3: Original & Perimeter Road Landfills, and Anomaly Area 3



- **Status**
  - Funding to date ~ \$15.5 M
  - Draft Record of Decision (ROD) Sites 3 & 5 – 1999
    - Flexible Membrane Liner
    - Pending Radiological Release Report
  - Expanded soil gas evaluation (sites 3 & 5) to help establish Institutional Control (IC) boundaries – 2004
  - Expanded Site Inspection Report for AA3
- **Focus**
  - Additional groundwater evaluation for AA3 – Feb 2005
  - Radiological Release Report – draft Dec 2004
  - Feasibility Study Addendum for sites 3 & 5 – draft Mar 2005
- **Future**
  - Reissue Sites 3 & 5 Proposed Plan for public comment and ROD – 2005
  - Remedial Design/Action, Long term monitoring, and ICs
  - OPS (Operating Properly and Successfully) Report - 2006
  - FOST and Long term Monitoring





## Sites 2 & 17: Magazine Road & Communication Station Landfills



### •Status

- Funding to date ~ \$32 M
- Final ROD (landfill covers & NFA for Site 17 groundwater) – 2000
- Landfill property transferred (remains under Federal control)
- 1000' IC extends into Parcel II

### •Focus

- Pre-construction activities (test pad) – summer 2005
- Evaluation of Site 2 groundwater continues with Aquifer Test report (draft Dec 2004) and FS Addendum (draft Mar 2005)

### •Future

- Construct landfill covers – 2005/2006
- Site 2 groundwater Proposed Plan and Draft ROD – 2005



## Site 1: Explosive Ordnance Disposal (EOD) Range



### •Status

- Funding to date ~ \$7 M
- Site NOT associated w/ Auction or Great Park Reuse
- USFWS proposed critical habitat (Riverside fairy shrimp)

### •Focus

- Remedial investigation report in development – draft Jun 2005
- Validation of federally endangered fairy shrimp habitat
- Delineation of groundwater contamination (perchlorate)
- Treatability Study for perchlorate contaminated groundwater

### •Future

- Final Remedial Investigation report – 2005
- Final ROD – 2007
- Last anticipated area to be transferred under FOST



## Site 8: Defense Reutilization and Marketing Office (DRMO) Storage Area



- **Status**

- Funding to date ~ \$3 M
- Draft ROD (excavation of shallow soils) – 1999
- Received Radiological Release (units 2, 3, & 5) – Jan 2005

- **Focus**

- Feasibility Study Addendum (include radiological) – draft Mar 2005
- Reissue Proposed Plan for public comment and ROD – 2005

- **Future**

- Remedial Design/Action and Site closeout



## Site 12: Sludge Drying Beds



- **Status**

- Funding to date ~ \$3 M
- Draft ROD (excavation of shallow soils) – 1999
- Received Radiological Release – Jan 2005

- **Focus**

- Reissue Proposed Plan for public comment and ROD – 2005
- Coordinate activities with Site 8

- **Future**

- Remedial Design/Action and Site closeout



## Site 11: Transformer Storage Area



- **Status**

- Funding to date ~ \$3 M
- Final ROD (excavation of shallow soils) – 1999
- Explanation of Significant Differences (risk reevaluation) – 2003

- **Focus**

- Draft Final Remedial Design Work Plan – Jan 2005
- Remedial Action fieldwork – May/Jun 2005

- **Future**

- Final Closeout report – 2006



## Site 16: Crash Crew Pit No. 2



- **Status**

- Funding to date ~ \$3.5 M
- Volatile Organic Compound (VOC) contaminated groundwater
- Petroleum contamination in deep soils
- Final ROD for Monitored Natural Attenuation (MNA) – 2003

- **Focus**

- Conduct MNA sampling (16 well locations)
- Draft Remedial Design – Jun 2005
- Remediate petroleum contamination (with SVE) – 2005/2006

- **Future**

- OPS (Operating Properly and Successfully) Report - 2006
- FOST and Long term Monitoring



## Site 18: VOC Contaminated Groundwater (Off-Station)



- **Status**

- Funding to date ~ \$24 M
- Settlement Agreement with local water districts – 2001
- Final ROD (remove, treat, non-potable use) – 2002

- **Focus**

- Irvine Ranch & Orange County Water Districts
  - Final Remedial Design report – May 2005
  - Procurement and drilling of extraction well ET-2
- Coordinate with Site 24 remedial design efforts

- **Future**

- Construction and Operational start up – 2005/2006
- OPS Report – 2007/2008



## Site 24: VOC Source Area (On-Station)



- **Status**

- Funding to date ~ \$16 M
- Final groundwater ROD (remove, treat, non-potable use) – 2002
- Remediation of VOC soil contamination complete – 2003
- Use local water districts for VOC treatment & disposal
  - Incorporated into Site 18 Settlement Agreement
- Final Remedial Design report – Dec 04

- **Focus**

- Issue No Further Action Proposed Plan & ROD – 2005
- Coordinate with Site 18 remedial design efforts

- **Future**

- FOST soil component of site – 2006
- Construction and Operational start up – 2005/2006
- OPS Report (groundwater) – 2007/2008



## No Further Action Sites: Various



- **Status**

- Obligated ~ \$24 M
- RODs finalized by Navy and Federal/State regulatory agencies
  - Sep 1997 (sites 4, 6, 9, 10, 13, 15, 19, 20, 21, 22, and 25)
  - Jun 2001 (sites 7 and 14)
- No groundwater or soil contamination that pose an unacceptable risk
- Residential reuse

- **Focus**

- None

- **Future**

- None



## Groundwater Monitoring



- **Nearly 250 monitoring well ports on- and off-station**
- **Monitoring round #20 (Sep 04) and #21 (Mar 05)**
  - ~ 100 monitoring wells sampled
  - Cost per sampling round ~ \$250,000 to \$350,000
- **Elimination of needless monitoring wells**
  - All wells removed from transferable property
  - Evaluating additional wells for decommission (~30 - 50)
- **Program supplemented site-specific monitoring requirements**
  - Future shift will be to site-specific monitoring, post-ROD
- **Indoor-air risk assessment verification modeling was performed at highest VOC groundwater sites**
  - Indoor air intrusion from VOCs is not an issue at El Toro



## Radiological Release Report



- **Historical Radiological Assessment completed – 2000**
  - Conclusion: only limited areas require additional surveys and assessments
- **Final survey sampling fieldwork – Feb 04**
- **All Site-Specific “mini” radiological release reports completed – Spring 2005**
  - Radiological being incorporated into Site 8 FS addendum
  - Hangers 296 & 297 sampling amendment and Action Memo - 2005
  - All work is coordinated and controlled
    - Navy Radiological Affairs Support Office
    - US EPA
    - California Department of Health Services



## Environmental Program Summary



	USTs	ASTs	OWSs	APHOs	SWMU/ TAAs	MSC (incl. 76 PRLs)	PCB XFRMRs	IRP SITES
<b>TOTAL (1032)</b>	<b>408</b>	<b>39</b>	<b>56</b>	<b>124</b>	<b>157</b>	<b>100</b>	<b>124</b>	<b>24</b>
<b>NFA* (854)</b>	<b>372</b>	<b>36</b>	<b>49</b>	<b>109</b>	<b>121**</b>	<b>30</b>	<b>124</b>	<b>13</b>
<b>Complete (83%)</b>	<b>91%</b>	<b>92%</b>	<b>87%</b>	<b>88%</b>	<b>77%</b>	<b>30%</b>	<b>100%</b>	<b>54%</b>
<b>Closeouts in Agency Review (11)</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>In Progress (167)</b>	<b>35</b>	<b>1</b>	<b>6</b>	<b>13</b>	<b>31</b>	<b>70</b>	<b>0</b>	<b>11</b>

\* >3% of NFAs (19 LOCs) required advanced cleanup

\*\* includes 3 SWMUs (104, 105, & 106) with NFA determinations pending results of radiological survey.



## Acronyms



• LOC	Location of Concern
• PRL	Potential Release Location
• UST	Underground Storage Tank
• AST	Aboveground Storage Tank
• OWS	Oil Water Separator
• APHO	Aerial Photographic Features/Anomalies
• SWMU	Solid Waste Management Unit
• TAAs	Temporary Accumulation Area
• MSC	Miscellaneous
• PCB XFRMR	Polychlorinated Biphenyl Transformer
• IRP	Installation Restoration Program
• NFA	No Further Action required



## Promote Reuse (Property Transfer)



- Environmental Baseline Survey (EBS)
  - Bottom-up review of entire El Toro program
  - Finalized September 2003
- Finding of Suitability to Transfer (FOST) ~2,798 acres
  - Documents 75% of available property is environmentally transferable
  - Finalized July 2004
- Finding of Suitability to Lease (FOSL) ~921 acres
  - 41 separate non-transferable carve-outs (remain under Navy control)
  - Finalized July 2004
- “Expedite restoration and reuse” – reduce No. & size of carve-outs
  - Tier One Priorities
    - Last unresolved LOC in a given carve-out (closure would eliminate carve-out)
  - Tier Two Priorities
    - Completion of LOC would significantly reduce carve-out area and remediation unlikely
  - Tier Three Priorities
    - Completion of LOC would not reduce carve-out area and/or complex LOC



## Redevelopment in Carve-out Areas



- In the FOSL areas, prior Government approval is required for alteration of the property (i.e., infrastructure removal or construction, demolition, grading, etc.).
- There is a project review process in which the new owner submits a project description to the Navy that describes how the work will be accomplished without adverse effects on:
  - our environmental remediation program,
  - human health and safety,
  - the environment.
- Navy Real Estate will coordinate review of the project with the environmental team (Navy & regulators) in accordance with our LIFOC requirements. The time frames for review and approval depend upon the potential impacts and the quality and completeness of the submittal.



## Funding



- **Funded/Obligated to Date ~ \$180 M (1985 – 2004)**
  - ~ \$131 M (Installation Restoration Program)
  - ~ \$ 49 M (Compliance Program)
- **Current Budget for Fiscal Year (FY) 2005**
  - ~ \$ 8 M
- **Estimated Cost to Complete – FY 05 and Beyond**
  - ~ \$ 72 M
- **Future Funding Associated with Land Sales Revenue**



# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
APHO (15 sites)										
APHO 11	III	B	SAIC 81: Trench, disturbed ground	X		DTSC	X			Site contains buried construction debris. Strategy for site closure is under development.
APHO 38	II	M	SAIC 252: Excavation (Building 1789 vicinity)	X		DTSC			X	Summary Report is in review at DTSC as of January 2005. NFA is anticipated.
APHO 44	II	F	SAIC 288: Disturbed Ground, Mounded Material, Trench (adjacent to IRP Site 17)	X		FFA		X		Site being addressed with IRP Site 2 & 17 remediation.
APHO 46	II	H, M	SAIC 416: Impoundment, Fill Area, Excavations (IRP Site 5 vicinity)	X		FFA	X			Site being addressed with IRP Site 5 program.
APHO 59	II	C	SAIC 20: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 60	II	C	SAIC 64: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 61	II	C	SAIC 106: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 62	II	C	SAIC 156: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 63	II	C	SAIC 443: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 64	II	C	SAIC 536: Extraction (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 65	II	C	SAIC 564: Grading appears to be complete (Anomaly Area 3)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 86	II	C	SAIC 66: Trench (within Anomaly Area 3 study area)	X		FFA	X			Strategy for management of Anomaly Area 3 is in development as of January 2005.
APHO 105	II	—	SAIC 217: Mounded material, disturbed ground (IRP Site 17/APHO 44 vicinity)	X		FFA	X			Site may be addressed during remediation of IRP Site 17.
APHO 118	II	G	SAIC 413: Disturbed ground (northeast of IRP Site 5 and near Building 840)	X	X	DTSC	X			Strategy for management of APHO 118 (disturbed ground near former engine test cell) is in development as of January 2005.
APHO 122	III	B	SAIC 570: Open storage (near Building 317)	X		DTSC	X			SAIC 570 (1955 photograph): open storage. Field sampling planned for 2005. NFA anticipated in 2006.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
PRL (59 sites)										
PRL 22	I	J	Electronics and communications shop	X		FFA			X	NFI anticipated.
PRL 46	I	I	Reproduction shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 47	I	I	Paint shop	X		FFA			X	NFI anticipated.
PRL 51	I	H	Auto Organization Shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 105	II	B	Dental clinic	X		FFA			X	NFI anticipated.
PRL 114	II	Q	Maintenance hangar	X		FFA			X	NFI anticipated.
PRL 118	II	E	Maintenance hangar	X		FFA			X	NFI anticipated.
PRL 127	II	Q	Tire shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 133	II	B	Office/training facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 154	III	B	Well pump house	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 235	II	Q	Former bore sighting range	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 245	III	B	Former DRMO Yard near Building 254 and demolished Building 246	X		FFA			X	NFI anticipated.
PRL 295	III	B	Maintenance hangar	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 296	III	B	Maintenance hangar	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 297	III	B	Maintenance hangar	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 298	III	B	Maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 299	III	B	Maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 310	III	B	Vehicle maintenance facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 312	III	B	Photographic laboratory	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 315	III	B	Maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
PRL 324	III	B	CO2 storage, former engine test cell	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 326	III	B	Hazardous materials transfer facility (former engine test cell)	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 354	II	M	Former skeet range	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 359	III	B	MTIS Building	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 360	III	B	Storage	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 368	III	B	Sewer dump station near Building 368	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 369	III	B	Wash area near Building 369	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 370	III	B	Public Works Shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 372	II	Q	Airfield operations/control tower	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 374	II	S	Former heating plant	X		FFA			X	NFI anticipated.
PRL 380	II	D	Standby generator building	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 386	III	B	Construction equipment maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 388	III	B	Field maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 390	II	O	Golf cart shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 435	III	B	Aircraft fire and rescue station	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 439	I	B	Medical and dental facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 442	II	M	Aviation armament shop/missile maintenance shop (includes SWMU 185 - former drum storage area)	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 445	III	B	Engine test cell	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 457	II	R	Dental clinic	X		FFA	X			Sampling. Tech reports to BCT in June 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
PRL 605	II	E	Maintenance hangar	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 606	II	E	Maintenance hangar	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 617/618	II	K	Aircraft sound abatement facility/engine test area	X		FFA			X	NFI anticipated.
PRL 634	II	B	Avionics shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 643	II	E	Fixed aircraft start system	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 655	III	B	Field maintenance shop	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 658	II	Q	Engine test cell	X		FFA			X	NFI anticipated.
PRL 671	III	B	Refueling vehicle wash area	X		FFA	X			PRL also identified as PRL 671/672 due to relation and proximity of Building 672. Sampling. Tech reports to BCT in June 2005.
PRL 673	II	M	Aircraft ground equipment shop	X		FFA			X	
PRL 716	II	Q	Engine test cell	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 745	II	D	Warehouse	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 747	II	Q	Contract fueling facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 800	III	B	Vehicle maintenance facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 886/887	II	K	Aircraft fueling stations (equivalent to MSC JP5 Stations 886 & 887)	X		FFA			X	PRL 886/887 coincides with the study area for MSC JP5 Fueling Stations 886 and 887; NFI anticipated.
PRL 923	II	Q	Drop tank rinse facility	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 1585	III	B	Wash rack (equivalent to OWS 96 (SWMU 291) and adjacent wash rack (SWMU 243))	X		FFA			X	NFI anticipated.
PRL 1601	III	B	Public Works Storage (to be investigated with transformer storage area, PCB A1).	X		FFA			X	NFI anticipated.
PRL Railroads	III	B	Railroad Spur Areas	X		FFA	X			Sampling. Tech reports to BCT in June 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
PRL Runway Infield Area	II	L	PRL Runway Infield Area	X		FFA	X			Sampling. Tech reports to BCT in June 2005.
PRL 7Unit1	III	B	IRP Site 7, Unit 1 north pavement area	X		FFA	X			Possible disposal site. Sampling. Tech reports to BCT in June 2005.
UST (36 sites)										
UST 1B	I	N	500 gal.	X		RWQCB		X		No known impacts to groundwater. Portable SVE unit was operated at this site. Additional site characterization and SVE operations required for closure.
UST 65A	I	M	1,400 gal.	X	X	RWQCB		X		Releases to soil and groundwater have been identified. SVE and monitored natural attenuation anticipated.
UST 70	I	K	500 gal.	X		RWQCB/ County	X	X		Additional site characterization and/or soil removal anticipated.
UST 72	I	K	500 gal.	X		RWQCB/ County	X	X		Additional site characterization and/or soil removal anticipated.
UST 75C	I	P	500 gal.	X		RWQCB	X			Tank closed in place beneath loading dock. Release to soils under investigation.
UST 98A	I	O	1,500 gal.	X		RWQCB		X		No known impacts to groundwater. Portable SVE unit was operated at this site. Additional site characterization and SVE operations anticipated.
UST 183 Groundwater Release	III	D	25,000 gal.		X	RWQCB	X			Vadose zone release at Tank Farm 2 has been closed under RWQCB letter of 3/27/2000. Impacted groundwater remains under evaluation.
UST 206	II	Q	50,000 gal.	X		RWQCB/ County		X		Site assessment. UST with dry wells. (SWMU-62)
UST 254	I	L	1,400 gal.	X	X	RWQCB		X		Soil and groundwater are impacted. SVE anticipated as part of remedy.
UST 308	II	I	280 gal.	X		RWQCB/ County	X	X		Release to soil has been identified. Additional characterization and/or removal may be required.
UST 314A	III	B	50,000 gal.	X		RWQCB/ County	X			Release to soil has been identified, and additional characterization is planned for 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
UST 314B	III	B	50,000 gal.	X		RWQCB/ County	X			Release to soil has been identified, and additional characterization is planned for 2005.
UST 314D	III	B	3,000 gal.	X		RWQCB/ County	X			Release to soil has been identified, and additional characterization is planned for 2005.
UST 364A	I	R	2,000 gal.	X	X	RWQCB			X	Portable SVE unit was operated at this site. Additional site characterization may be necessary.
UST 367	I	Q	2,500 gal.	X		RWQCB			X	Portable SVE unit was operated during 2004. Additional site characterization may be required.
UST 390A	II	O	550 gal.	X		RWQCB			X	Portable SVE unit operated at this site. Additional site characterization may be required.
UST 390B	II	O	2,000 gal.	X		RWQCB			X	Portable SVE unit operated at this site. Additional site characterization may be required.
UST 392D	II	I	2,000 gal.	X		RWQCB			X	Portable SVE unit operated at this site. Additional site characterization may be required.
UST 398	II	Q	108,000 gal.	X	X	RWQCB/ County		X		Releases of jet fuel to soil and groundwater are documented. SVE operations in progress as of January 2005. Additional site characterization may be necessary. Monitored natural attenuation anticipated as groundwater remedy.
UST 529	III	B	25,000 gal.	X	X	RWQCB/ County	X			Releases to soil and groundwater are documented. Additional site characterization may be required.
UST 547	II	F	567,000 gal.	X	X	RWQCB/ County		X		Releases of JP5 to soil and groundwater identified. SVE and MNA are anticipated remedies. Tanks will be closed in place.
UST 548	II	F	567,000 gal.	X	X	RWQCB/ County		X		Releases of JP5 to soil and groundwater identified. SVE and MNA are anticipated remedies. Tanks will be closed in place.
UST 549	II	F	567,000 gal.	X	X	RWQCB/ County		X		Releases of JP5 to soil and groundwater identified. SVE and MNA are anticipated remedies. Tanks will be closed in place.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
UST 550	II	F	567,000 gal.	X	X	RWQCB/ County		X		Releases of JP5 to soil and groundwater identified. SVE and MNA are anticipated remedies. Tanks will be closed in place.
UST 551	II	F	567,000 gal.	X	X	RWQCB/ County		X		Releases of JP5 to soil and groundwater identified. SVE and MNA are anticipated remedies. Tanks will be closed in place.
UST 637-1	II	P	12,000 gal.	X		RWQCB/ County		X		Fuel-impacted soils were excavated and removed in 2000, and additional corrective actions for soil are planned. No groundwater response actions are planned.
UST 637-2	II	P	12,000 gal.	X		RWQCB/ County		X		Fuel-impacted soils were excavated and removed in 2000, and additional corrective actions for soil are planned. No groundwater response actions are planned.
UST 637-3	II	P	12,000 gal.	X		RWQCB/ County		X		Fuel-impacted soils were excavated and removed in 2000, and additional corrective actions for soil are planned. No groundwater response actions are planned.
UST 651-1	I	B	12,000 gal.	X	X	RWQCB		X		Release of MTBE to groundwater. Portable SVE unit was operated during 2001. Corrective actions required for soil and groundwater.
UST 651-2	I	B	12,000 gal.	X	X	RWQCB		X		Release of MTBE to groundwater. Portable SVE unit was operated during 2001. Corrective actions required for soil and groundwater.
UST 651-3	I	B	12,000 gal.	X	X	RWQCB		X		Release of MTBE to groundwater. Portable SVE unit was operated during 2001. Corrective actions required for soil and groundwater.
UST 651-4	I	B	12,000 gal.	X	X	RWQCB		X		Release of MTBE to groundwater. Portable SVE unit was operated during 2001. Corrective actions required for soil and groundwater.
UST 764A	II	I	500 gal.	X		RWQCB/ County	X			Additional site characterization is planned. No known impacts to groundwater. NFA anticipated following soil sampling.
UST 800G	III	B	30 gal.	X		DTSC/ RWQCB	X			Former acid neutralization tank northeast of Building 800. Sampling strategy for sewer line from tank in progress in 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
UST 850A	I	F	5,000 gal.	X		RWQCB/ County	X	X		Release of JP5 to soil identified. Additional soil sampling and/or corrective actions are required.
UST 850B	I	F	5,000 gal.	X		RWQCB/ County	X	X		Release of JP5 to soil identified. Additional soil sampling and/or corrective actions are required.
<b>AST (3 sites)</b>										
AST 314	III	B	1,000 gal.	X		DTSC	X			Sampling of soils near former tank site planned. <b>NFA anticipated.</b>
AST 386A	III	B	200 gal.	X		DTSC			X	Hydraulic fluid tank for vehicle lifts in Building 386. Building 386 will be evaluated with PRL 386. <b>NFA anticipated.</b>
AST 386B	III	B	100 gal.	X		DTSC			X	Hydraulic fluid tank for vehicle lifts in Building 386. Building 386 will be evaluated with PRL 386. <b>NFA anticipated.</b>
<b>TAA (25 sites)</b>										
TAA 2	I	E	< 90-day accumulation area - Hanger 2	X		DTSC	X			Plans for sampling in development. Sampling and reporting anticipated to be completed in 2006.
TAA 5B	I	F	< 90-day accumulation area-Bldg 5	X		DTSC	X			SWMU/AOC 26. Plans for sampling in development. Sampling and reporting anticipated to be completed in 2006.
TAA 7	I	G	< 90-day accumulation area-northeast of Bldg 7	X		DTSC	X			Plans for sampling in development. Sampling and reporting anticipated to be completed in 2006
TAA 22	I	J	< 90-day accumulation area-Bldg 22	X		DTSC	X			Plans for sampling in development. Sampling and reporting anticipated to be completed in 2006
TAA 31B	III	B	< 90-day accumulation area-Bldg 31	X		DTSC			X	Regulatory review at DTSC in progress as of January 2005. <b>NFA anticipated.</b>
TAA 51	I	H	< 90-day accumulation area-Bldg. 51	X		DTSC	X			SWMU/AOC 33. RFA Sampling Visit was conducted in 1992.
TAA 115	II	E	< 90-day accumulation area-Bldg. 115	X		DTSC	X			SWMU/AOC 39



## Non-IRP Locations with Remaining Characterization or Remediation Requirements

### Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
TAA 130A	II	B	< 90-day accumulation area-Bldg. 130	X		DTSC		X		SWMU/AOC 294. Excavation and removal of shallow contaminated soils planned for 2005.
TAA 130B	II	B	< 90-day accumulation area-Bldg. 130	X		DTSC		X		SWMU/AOC 295. Excavation and removal of shallow contaminated soils planned for 2005.
TAA 130C	II	B	< 90-day accumulation area-Bldg. 130	X		DTSC		X		SWMU/AOC 42. Excavation and removal of shallow contaminated soils planned for 2005.
TAA 155B	III	B	< 90-day accumulation area-Bldg. 155	X		DTSC	X			SWMU/AOC 241. Field sampling planned. NFA anticipated.
TAA 297	III	B	< 90-day accumulation area-Bldg. 297	X		DTSC	X			SWMU/AOC 73. Site includes SWMUs 78, 79, 80, 81, and 82. Field sampling planned for 2005. NFA anticipated since site is located within Site 24 study area and no evidence of significant releases were identified during soil gas survey. SVE treatment at Site 24.
TAA 370	III	B	Hazardous material storage/ < 90-day accumulation area-Bldg. 370	X		DTSC	X			Site will be addressed with PCB A1.
TAA 371A	II	K	< 90-day accumulation area-Bldg. 371 (adjacent to Former IRP Site 19, Unit 1)	X		DTSC	X			SWMU/AOC 107
TAA 371B	II	K	< 90-day accumulation area-Bldg. 371 (adjacent to Former IRP Site 19, Unit 1)	X		DTSC	X			SWMU/AOC 242
TAA 388A	III	B	< 90-day accumulation area-Bldg. 388	X		DTSC	X			Plans for sampling are in progress as of January 2005. Sampling planned for late 2005.
TAA 388B	III	B	< 90-day accumulation area-Bldg. 388	X		DTSC	X			Plans for sampling are in progress as of January 2005. Sampling planned for late 2005.
TAA 634	II	B	< 90-day accumulation area-Bldg. 634	X		DTSC	X			Plans for sampling are in progress as of January 2005. Sampling planned for late 2005.
TAA 651A	I	B	<90-day accumulation area-Bldg 651	X		DTSC			X	SWMU/AOC 242. NFA anticipated.

## Non-IRP Locations with Remaining Characterization or Remediation Requirements

### Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
TAA 651B	I	B	<90-day accumulation area-Bldg 651	X		DTSC	X			Former accumulation area located on asphalt-paved area adjacent to Building 651. Additional sampling planned for 2005.
TAA 671	III	B	< 90-day accumulation area-Bldg. 671	X		DTSC	X			Plans for sampling are in progress as of January 2005. Sampling planned for late 2005.
TAA 672	III	B	< 90-day accumulation area-Bldg. 672	X		DTSC	X			Plans for sampling are in progress as of January 2005. Sampling planned for late 2005.
TAA 769	II	B	< 90-day accumulation area-Bldg. 769	X		DTSC			X	Responses to DTSC comments in progress as of January 2005. NFA anticipated.
TAA 771	III	B	< 90-day accumulation area-Bldg. 771	X		DTSC		X		Plans for excavation and removal of contaminated soil in progress. Removal planned for 2005.
TAA 800	III	B	< 90-day accumulation area-Bldg. 800	X		DTSC			X	DTSC review in progress as of January 2005. NFA anticipated.
<b>RFA (11 sites)</b>										
RFA 10	II	D	Abandoned Well 24-4274 (near Buildings 380 and 385)	X			X			Site is located within the investigation boundary of IRP Site 3.
RFA 43	II	E	Drum storage area (near Building 139)	X			X			Sampling planned for 2005. NFA anticipated.
RFA 72	III	B	< 90-day accumulation area (near Building 296 and IRP Site 7)	X		DTSC		X		RFA 72 is located near IRP Site 7, Unit 3 (New East Pavement Edge). Planning for removal of shallow contaminated soils will be conducted in 2005 with removal possible in 2006.
RFA 78	III	B	Drum storage area (near Building 297)	X		DTSC	X			SWMUs 78, 79, 80, 81, and 82 are located near TAA 297 and will be evaluated with TAA 297. Field sampling planned for 2005.
RFA 79	III	B	Drum storage area (near Building 297)	X		DTSC	X			SWMUs 78, 79, 80, 81, and 82 are located near TAA 297 and will be evaluated with TAA 297. Field sampling planned for 2005.
RFA 80	III	B	Drum storage area (near Building 297)	X		DTSC	X			SWMUs 78, 79, 80, 81, and 82 are located near TAA 297 and will be evaluated with TAA 297. Field sampling planned for 2005.
RFA 81	III	B	Drum storage area (near Building 297)	X		DTSC	X			SWMUs 78, 79, 80, 81, and 82 are located near TAA 297 and will be evaluated with TAA 297. Field sampling planned for 2005.

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
RFA 82	III	B	Drum storage area (near Building 297)	X		DTSC	X			SWMUs 78, 79, 80, 81, and 82 are located near TAA 297 and will be evaluated with TAA 297. Field sampling planned for 2005.
RFA 89	III	B	Drum storage area (near Buildings 155 and 306)	X		DTSC	X			Sampling planned for 2005. NFA anticipated.
RFA 185	II	M	Drum storage area (located within investigation area of PRL 442)	X		DTSC	X			Former drum storage area was identified on 1980 photograph, north of Building 673. The site is located within the investigation area of PRL 442 that is located northwest of Building 673.
RFA 198	III	B	Vehicle wash rack (near Buildings 655 and 759)	X		DTSC/ RWQCB			X	Final RFA Report (JEG 1993) recommended repair of cracks in wash rack surface. Repairs were completed in 1998. RWQCB concurred with NFA status on 5 October 2000. Wash rack is located adjacent to UST 759B and OWS 759A.
<b>OWS (7 sites)</b>										
OWS 674B	III	B	1,400 gal.	X		DTSC/ RWQCB			X	Bee Canyon Wash. Confirmation soil sampling may be required. NFA anticipated.
OWS 674C	III	B	52 gal.	X		DTSC/ RWQCB			X	Bee Canyon Wash. Confirmation soil sampling may be required. NFA anticipated.
OWS 675B	III	B	1,400 gal.	X		DTSC/ RWQCB			X	Agua Chinon Wash. Confirmation soil sampling may be required. NFA anticipated.
OWS 675C	III	B	52 gal.	X		DTSC/ RWQCB			X	Agua Chinon Wash. Confirmation soil sampling may be required. NFA anticipated.
OWS 764B	II	I	100 gal.	X		DTSC/ RWQCB	X			Confirmation soil sampling required. NFA anticipated.
OWS 832	II	M		X		DTSC/ RWQCB			X	DTSC review in progress. RWQCB concurred with NFA. NFA anticipated.
OWS 850E	I	F	1,500 gal.	X		DTSC/ RWQCB		X		Release to soil identified. Additional sampling and/or corrective actions required.
<b>MSC (11 sites)</b>										

# Non-IRP Locations with Remaining Characterization or Remediation Requirements

## Former Marine Corps Air Station, El Toro

Database Tracking	Parcel ID	Carve-out	Description	Media of Focus		Key Regulatory Agency	Current/Next Phase of Progress			General Comments
				Soil	G/W		Study	Site Mitigation	Close out	
MSC B3	I	F	Former burn pit.	X		RWQCB		X		Petroleum exclusion site. Former burn pit with SVE planned as corrective action.
MSC JP5	II	F, K, Q	JP-5 fuel supply pipelines	X	X	RWQCB	X			Some segments and JP5 fueling stations have been closed.
MSC P1/Unit 2	III	B	Unit 2 of MSC P1 near UST 493 requires soil removal; plan for removal has been approved. Past pesticide storage area at Bldg. 1687 (MSC P1, Unit 1) is NFA.	X		DTSC		X		Soil excavation and removal is planned for Unit 2 of MSC P1 (near IRP Site 12) for 2005. Unit 1 of MSC P1 (near Building 1687 and Golf Course) achieved no further action status on 3/30/2004.
MSC R1	II	C	Possible refuse area next to family housing (near Building 722)	X		FFA	X			Identified in interviews. The site coincides with the location of Anomaly Area 3.
MSC R2	II	H	Possible refuse area south of IRP Site 5	X		FFA			X	Identified in interviews. Being addressed with APHO 46. NFA anticipated.
MSC SRU 1	I	B	Silver recovery units at hospital (SRU 1A) and dental clinic (SRU 1B)-Bldg. 439	X		DTSC	X			Addressed as PRL for Building 439.
MSC SRU 3	III	B	Former photo lab silver recovery units (SRU 3 at Bldg 312; SRU 3A at Bldg 46; SRU 3B at Bldg 133; and 3C at Bldg 457)	X		DTSC	X			This group of Silver Recovery Units will be addressed as Potential Release Locations at Buildings 312, 46, 133, 457.
MSC SRU 3A	I	I	Former photo lab silver recovery units (SRU 3 at Bldg 312; SRU 3A at Bldg 46; SRU 3B at Bldg 133; and 3C at Bldg 457)	X		DTSC	X			This group of Silver Recovery Units will be addressed as Potential Release Locations at Buildings 312, 46, 133, 457.
MSC SRU 3B	II	B	Former photo lab silver recovery units (SRU 3 at Bldg 312; SRU 3A at Bldg 46; SRU 3B at Bldg 133; and 3C at Bldg 457)	X		DTSC	X			This group of Silver Recovery Units will be addressed as Potential Release Locations at Buildings 312, 46, 133, 457.
MSC SRU 3C	II	R	Former photo lab silver recovery units (SRU 3 at Bldg 312; SRU 3A at Bldg 46; SRU 3B at Bldg 133; and 3C at Bldg 457)	X		DTSC	X			This group of Silver Recovery Units will be addressed as Potential Release Locations at Buildings 312, 46, 133, 457.
PCB A1	III	B	Transformer storage area near water tank 175	X		DTSC	X			Located near Water Storage Tank 175. Sampling planned for 2005. NFA anticipated.

# MARINE CORPS AIR STATION EL TORO

## Federal Facility Agreement

### Appendix A

#### Submittal Milestones

#### Site 1 (Explosive Ordnance Disposal Range)

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Remedial Investigation	06-03-2005
Draft Feasibility Study	01-05-2006
Draft Proposed Plan	06-14-2006
Draft Record of Decision	11-07-2006

#### Site 2 Groundwater (Magazine Road Landfill)

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Feasibility Study Addendum	03-28-2005
Draft Proposed Plan	06-20-2005
Draft Record of Decision	11-28-2005

#### Sites 2 & 17 (Magazine Road and Communication Station Landfills)

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Final Remedial Design	07-19-2004
Draft Operation and Maintenance Plan	06-05-2006
Draft Remedial Action [Closeout] Report	08-30-2006

#### Sites 3 & 5 (Original and Perimeter Road Landfills)

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Feasibility Study Addendum	03-07-2005
Revised Draft Proposed Plan	04-28-2005
Revised Draft Record of Decision	09-21-2005

#### Anomaly Area 3

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Remedial Investigation	04-07-2005
Draft Feasibility Study	TBD
Draft Proposed Plan	TBD
Draft Record of Decision	TBD

#### Sites 8 (DRMO Storage Yard) & 12 (Sludge Drying Beds)

<b>Primary Submittal</b>	<b>Deliverable Date</b>
Draft Feasibility Study Addendum	03-09-2005
Revised Draft Proposed Plan	04-01-2005
Revised Draft Record of Decision	08-25-2005

# MARINE CORPS AIR STATION EL TORO

## Federal Facility Agreement

### Appendix A

#### Submittal Milestones

**Site 11 (Transformer Storage Yard)****Primary Submittal****Deliverable Date**

Draft Remedial Action Work Plan

06-30-2004

Draft Project Closeout Report

10-06-2005

**Site 16 (Crash Crew Pit No. 2)****Primary Submittal****Deliverable Date**

Draft RD/RA MNA Work Plan

11-18-2003

Draft Remedial Design

06-15-2005

Draft Operating Properly and Successfully  
(OPS) Report

11-19-2005

**Site 18 (VOC Regional Groundwater Plume)****Primary Submittal****Deliverable Date**

Preliminary Remedial Design (90% Design)

03-14-2005

Final Remedial Design (100% Design)

05-31-2005

Draft Operation &amp; Maintenance Plan

09-11-2006

Draft Project Closeout Report

03-30-2007

**Site 24 (VOC Source Area – Shallow Groundwater Unit)****Primary Submittal****Deliverable Date**

Preliminary Remedial Design (90% Design)

06-02-2004

Final Remedial Design (100% Design)

12-13-2004

Draft Operation &amp; Maintenance Plan

09-11-2006

Draft Project Closeout Report

03-30-2007

**Site 24 (VOC Source Area – Vadose Zone Soil)****Primary Submittal****Deliverable Date**

Draft Proposed Plan

04-01-2005

Draft Record of Decision

08-25-2005



Terry Tamminen  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

5796 Corporate Avenue  
Cypress, California 90630



Arnold Schwarzenegger  
Governor

December 7, 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, California 92618

### SUMMARY REPORT FOR AERIAL PHOTOGRAPH ANOMALY (APHO) 106, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated April 15, 2003 and supplemental information dated November 12, 2004. The report was submitted in response to DTSC's May 12, 1999 comment letter on the April 1999 Technical Memorandum for APHOs at MCAS El Toro. The summary report presents the results of the record search activities and visual inspections of APHO 106 (also referenced as Science Applications International Corporation (SAIC) 219). APHO 106, identified in a May 19, 1971 photograph, is described as an area of disturbed ground with a trench, mounded material and an excavation. APHO 106 is located within an archery range located east of Magazine Road Landfill and northeast of a water storage tank adjacent to Borrego Canyon Wash in the northeast quadrant of the Station.

The report recommends a no further status for APHO 106 based on evaluation of field inspection results conducted on November 10, 2004, environmental program documents, and historical property record. No evidence of industrial waste disposal or industrial activities was observed during the visual inspection. The maintenance of the access roads and associated drainage structures, and trails to the archery targets all could have caused the appearance of disturbed ground, trench or excavation. Targets with earthen berms could have caused the appearance of mounded material identified in the 1971 aerial photo.

Mr. F. Andrew Piszkin, P.E.  
December 7, 2004  
Page 2

Based on the results of the visual inspection and historical record search, DTSC concurs with the no further action status designation for APHO 106. If you have any questions, please contact me at (714) 484-5419.

Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
23161 Lake Center Drive, Suite 100  
Lake Forest, California 92630

Ms. Marcia Rudolph  
Restoration Advisory Board Subcommittee Chair

[REDACTED]

Mr. Richard Muza  
Remedial Project Manager  
U. S. Environmental Protection Agency Region IX  
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Mr. Steven Sharp  
Orange County Health Care Agency  
2009 East Edinger Avenue  
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Mr. F. Andrew Piszkin, P.E.  
December 7, 2004  
Page 3

cc: Mr. John Broderick  
Remedial Project Manager  
California Regional Water Quality Control Board  
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Ms. Content Arnold  
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Ms. Lynn Hornecker  
Remedial Project Manager  
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Terry Tamminen  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

5796 Corporate Avenue  
Cypress, California 90630



Arnold Schwarzenegger  
Governor

December 10, 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, California 92618

### APPROVAL OF CLOSURE REPORT FOR TEMPORARY ACCUMULATION AREA (TAA) 130A & 130B, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated January 12, 2004, prepared by Shaw Environmental Inc. for Naval Facilities Engineering Command. The report summarizes the results of soil vapor sampling and confirmation soil sampling collected in May and July 2003 at the former TAA 130A & 130B. A total of 14 vapor samples and 12 confirmation soil samples were collected from three locations within TAA 130A & 130 B. The soil samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (VOCs), Selected Ion Monitoring (SIM) by SVOCs for selected analytes, total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, pesticides, and metals.

TAA 130A & 130B (also referenced as Solid Waste Management Unit (SWMU) 294 and SWMU 295, respectively) were identified as a temporary Drum Storage Area (DSA) near Building 130 during the development of the Resource Conservation and Recovery Act Facility Assessment (RFA) prepared for El Toro. The DSA may have been used for storage of paint, toluene, xylene, chromium, lead, and cadmium. Former TAA 130A & 130B is described as an unbermed concrete paved area approximately 10 feet long by 20 feet wide located 40 feet west of Building 130 in the northeast quadrant of the Station.

Based on the review of this closure report, we agree with the Navy's recommendation of no further action for TAA 130A & 130B. Also, the units should be identified as "closed" and suitable for residential uses in the next Base Realignment Closure Business Plan update.

Mr. F. Andrew Piszkin  
December 10, 2004  
Page 2

If you have any question, please call me at (714) 484-5419.

Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
23161 Lake Center Drive, Suite 100  
Lake Forest, California 92630

Ms. Marcia Rudolph  
Restoration Advisory Board Subcommittee Chair

[REDACTED]

Mr. Richard Muza  
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Mr. John Broderick  
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Mr. F. Andrew Piszkin

December 10, 2004

Page 3

cc: Ms. Content Arnold  
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Ms. Lynn Hornecker  
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Naval Facilities Engineering Command  
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Terry Tamminen  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

5796 Corporate Avenue  
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Arnold Schwarzenegger  
Governor

December 14, 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, California 92618

### COMMENTS ON THE CLOSURE REPORT FOR TEMPORARY ACCUMULATION AREA (TAA) 769, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated June 4, 2003, prepared by Shaw Environmental Inc. for Naval Facilities Engineering Command. The closure report summarizes the results of additional soil samples collected at TAA 769 in April 2003. The report was submitted in response to DTSC's request for closure strategy regarding closure requirements. Six confirmation samples were collected from three hand auger boring locations at 18 and 36 inches below ground surface (bgs). The samples were analyzed for volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs) in soil using EPA method 8270C and Selected Ion Monitoring (SIM) for selected analytes, total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, pesticides, and metals.

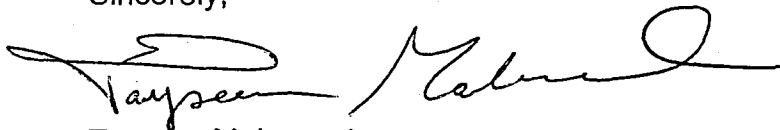
TAA 769 (also referenced as Solid Waste Management Unit (SWMU) 222) is located southeast of structure 175 (water storage tank) in the southwest quadrant of the station and was identified as a temporary hazardous waste storage area (HWSA) during the development of the Resource Conservation and Recovery Act Facility Assessment (RFA) prepared for El Toro. Former TAA 769 consists of an approximately 17-foot by 12-foot concrete pad, roof, and berm enclosed by a chain link fence. Based on our review, DTSC has the following comments:

Mr. F. Andrew Piszkin  
December 14, 2004  
Page 2

1. Construction Worker Scenario: We concur with the Navy on evaluating potential risks to human health under the hypothetical residential exposure scenario. In addition, please include the construction worker exposure scenario in the HHRAs to address activities associated with potential redevelopment. The typical assumptions for the construction worker scenario include a soil ingestion rate of 330 mg/day, exposure duration of one year, and an exposure frequency of 250 days a year. It should be noted that cobalt and beryllium are carcinogenic via inhalation. Since the intake through inhalation could be potentially higher in the construction scenario, the human health risk assessment should demonstrate whether or not the screening risk and hazard index estimates for a construction worker are acceptable.
2. Section 5.4, 4<sup>th</sup> paragraph, page 5-2: Beryllium should be added to the list of detected carcinogens because beryllium is carcinogenic via inhalation.
2. Table 3 – Residential Risk Screening Worksheet for Soil: Beryllium should be included in the calculation of cumulative risk (see comment above).
4. Rather than calculate a hazard index for lead through a comparison with the Cal-EPA PRG, lead should be evaluated by presenting the predicted blood lead level associated with exposures to lead in the soil. The Lead Spreadsheet (DTSC), <http://www.dtsc.ca.gov/sciencetechnology> should be used for this evaluation, and the results presented in the Addendum to Summary Report. Therefore, the cumulative non-cancer hazard index should not include the ratio of lead to its residential soil PRG. Please revise Table 3 accordingly.
5. Section 6, page 6-1, last bullet. Please add beryllium to the list of detected carcinogens in soil.

If you have any question, please call me at (714) 484-5419.


Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
23161 Lake Center Drive, Suite 100  
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Mr. F. Andrew Piszkin  
December 14, 2004  
Page 3

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Alan C. Lloyd, Ph.D.  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

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Arnold Schwarzenegger  
Governor

December 21, 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
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Irvine, California 92618

### APPROVAL OF SUMMARY REPORT FOR AERIAL PHOTOGRAPH ANOMALY (APHO) 120 FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated October 30, 2003. The report was submitted in response to DTSC's May 12, 1999 comment letter on the April 1999 Technical Memorandum for APHOs at MCAS El Toro. The summary report presents the results of visual inspections and the historical record search activities conducted at this site and recommended no further action for APHO 120.

APHO 120 (also referenced as Science Applications International Corporation (SAIC) 488), identified in an aerial photograph taken on November 1, 1984, is described as wet soil and probable stains southwest of Building 305 near South Marine Way and O Street in the southwest quadrant of former MCAS El Toro. The visual site inspections conducted on October 14 and 21, 2003 indicated no stained soil, wet spot, or discolored areas. Also, historical property record and environmental documents indicate Building 305 was used for academic instruction, administrative offices, and storage since the 1950's. The Department of Navy (DON) concluded that the wet soil and appearance of liquid were the result of water from landscape irrigation, testing of fire hydrant, or maintenance of a water heater at Building 305.



Mr. F. Andrew Piszkin, P.E.  
December 21, 2004  
Page 2

Based on the information presented in the report, DTSC concurs with the DON's recommendation of no further action for APHO 120. If you have any questions, please call me at (714) 484-5419.

Sincerely,

Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
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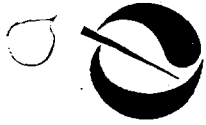
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Mr. F. Andrew Piszkin, P.E.  
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## Department of Toxic Substances Control

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December 30, 2004

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COMMENTS ON WORK PLAN FOR TEMPORARY ACCUMULATION AREA (TAA) 7,  
TAA 651B, AERIAL PHOTOGRAPH ANOMALY (APHO 122), UNDERGROUND  
STORAGE TANK (UST 764A)/OIL WATER SEPARATOR (OWS 764B), FORMER  
MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated October 21, 2004, prepared by Geofon Inc. for Naval Facilities Engineering Command. The work plan addresses previous comments for TAA 7, TAA 651B, UST 764A/OWS 764B, and proposes a sampling strategy for APHO 122.

TAA 7 was a former paint storage locker where upon visual inspections paint stains were observed. The May 21, 2004 letter from DTSC recommended additional sampling at the storage unit. In this work plan the Department of Navy (DON) proposes to take 3 additional samples at depths of 1.5, 3, and between 7-10 feet below ground surface (bgs) to test for volatile organic compounds (VOCs) and metals.

TAA 651B is described as 20 feet wide by 20 feet long asphalt paved area that is enclosed by a chain-link fence located southwest of Building 651. DTSC did not agree with previous sampling results because several samples exceeded holding times for analysis. In this work plan the DON proposes to take 6 samples at 1.5 and 3 feet bgs from 3 locations. The samples will be analyzed for total petroleum hydrocarbons, VOCs, semi-VOCs, pesticides, herbicides, polychlorinated biphenyls (PCBs), and metals.

Mr. F. Andrew Piszkin  
December 30, 2004  
Page 2

UST 764A was an underground storage tank used for holding waste oil residue from OWS 764B. The tanks were removed in 1999 and confirmation sampling indicated the presence of residual petroleum hydrocarbons beneath OWS 764B. DTSC's March 30, 2001 letter requested additional characterization of the petroleum residue. The work plan proposes to collect samples at approximately 5, 10, and 15 feet bgs from one soil boring directly beneath OWS 764B. The samples will be analyzed for total petroleum hydrocarbons TPH (as diesel and gasoline), VOCs, and metals.

APHO 122 was an open storage area located west of building 317, near M Street between S 15<sup>th</sup> Street and Perimeter Road. This site contains two large open field storage areas separated by a railroad track that leads into building 317. Historical record search indicated the area was used for storage of petroleum hydrocarbons, pesticides, and herbicides. This work plan proposes 6 soil samples to be collected at 1 foot bgs and analyzed for TPH (as diesel and gasoline), VOCs, semi-VOCs, organochlorine pesticides, organophosphorus pesticides, chlorinated herbicides, and metals.

Based on the information provided, DTSC concurs with the additional investigations proposed for TAA 7, TAA 651B, and UST 764A/OWS 764B. However, the proposed sampling for APHO 122 is not adequate for lateral and vertical characterization of the site. Please submit a revised sampling plan for APHO 122.

If you have any question, please call me at (714) 484-5419.

Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
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Restoration Advisory Board Subcommittee Chair



Mr. F. Andrew Piszkin  
December 30, 2004  
Page 3

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Agency Secretary  
Cal/EPA



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Arnold Schwarzenegger  
Governor

January 12, 2005

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, California 92618

### COMMENTS ON DRAFT TECHNICAL MEMORANDUM, AQUIFER TEST IRP SITE 2, MAGAZINE ROAD LANDFILL, FORMER MARINE CORPS AIR STATION EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated November 2004, prepared by Earth Tech, Inc. This technical memorandum presents the results of the long-term aquifer test conducted from December 2002 to July 2003 at the Magazine Road Landfill, Installation Restoration Program (IRP) Site 2. Based on our review, DTSC has the following comments:

#### General Comments

1. Changing the pumping rates during the 'constant-rate' aquifer tests may make the data unusable past the point in time where the adjustments were made.
2. Transmissivity and storativity are aquifer parameters best applied to confined aquifers of considerable lateral extent. The subject site appears to be comprised of very local groundwater units with barriers between them, and small lateral extent. Calculation of hydraulic conductivity, specific storage, and compressibility for these individual units may be more useful in characterizing the site.

#### Specific Comments


1. Evidence of anaerobic biodegradation may not be conclusive. The presence of 1,2-DCE can be explained as a release of an industrial solvent or of wastes containing 1,2-DCE such as cellulose acetate airplane dope. If biodegradation is considered as a remedial alternative, the Department of Navy (DON) should propose a detailed feasibility study designed to measure and document the appropriate site characteristics for successful mitigation.

2. The Memorandum discusses and estimates well efficiency for several wells. This parameter, the ratio of drawdown outside the well to drawdown inside the pumping well, relies on valid data from observation wells. Please note that the apparent recharge following rain events at the site makes the observed drawdown data unreliable for all wells other than DGMW60 and NEW08A. Please consider removing the discussion of other well efficiencies from the memorandum.
3. The apparent recharge following rain events may arise from several causes. The reported observations suggest that the saturated zone is very heterogeneous, and that lithologic changes, faulting, and proximity to the channel of Borrego Canyon Wash have strong effects on local groundwater movement. For example:
  - a. The recharge may be from water gathered in the valley of the Wash and rapidly channeled to the water table through very coarse gravel and cobble soil columns
  - b. The apparent recharge may be due to saturation front effects, where a local wetting front advances downward through the soil and compresses the vadose zone air column. This effectively raises head at the water table without adding significantly to the volume of stored water. See, for example, Freeze and Cherry 1979 Chapter 6.8
  - c. Other effects are possible.Please evaluate and discuss the all potential complexities of the site that may cause the apparent recharge.
4. The memorandum refers to 'regional potentiometric surface changes' in the discussion of apparent recharge events. Groundwater well data from other wells in the region should be checked to verify the accuracy of this assumption. The study population of wells is of very limited extent, and is not usefully regarded as a region.
5. Contaminants may still be migrating to groundwater in some areas of the site. Note for example the well log for MW-59 (Appendix B), which shows an FID reading of 100-200 ppm in soil at 50 feet bgs, about 10 feet above groundwater. This well is in the Area D2 waste body and may be near a vertical contaminant transport pathway.
6. A groundwater barrier is reasonably interpreted from the data, but the contaminated water north of the barrier may be crossing between wells NEW26 (3.5 µg/L TCE) and NEW02 (nd for TCE). Please evaluate the need for additional wells to evaluate this data gap.

Mr. F. Andrew Piszkin, P.E.  
January 12, 2005  
Page 3

If you have any questions, please contact me at (714) 484-5419.

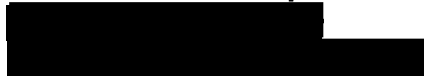
Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
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Ms. Marcia Rudolph  
Restoration Advisory Board Subcommittee Chair



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January 12, 2005

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January 14, 2005

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
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7040 Trabuco Road  
Irvine, California 92618

### APPROVAL OF 100% DESIGN SUBMITTAL, SHALLOW GROUNDWATER UNIT REMEDIAL ACTION, IRP SITE 24, VOLATILE ORGANIC COMPOUNDS SOURCE AREA, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated December 2004, prepared by Weston Solutions, Inc. The 100 percent design submittal provides the completed engineering design, specifications, and implementation methods to be followed during the remedial action. The document includes the Construction Quality Control Plan and the Contingency Plan.

Based on our review of the document and responses to DTSC's comments dated August 2, 2004, this 100 percent design submittal for the Shallow Groundwater Unit is conditionally approved subject to the following conditions:

1. Response to Specific Comments #2 & #5: It is acceptable to use view ports for leak detection observation instead of remote leak detection system. However, more labor intensive inspections need to be included in the Operation and Maintenance (O&M) Manual when the manual is developed.
2. Response to Specific Comment #12: DTSC prefers Summa canisters instead of Tedlar bags for the collection of vapor samples. The collection methodology, holding time, etc. may be addressed in the O&M Manual.

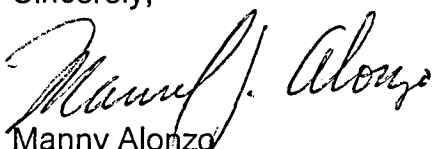
Mr. F. Andrew Piszkin, P.E.

January 12, 2005

Page 2

If you have any questions, please contact Mr. Tayseer Mahmoud, Senior Hazardous Substances Engineer, at (714) 484-5419.

Sincerely,



Manny Alonzo

Unit Chief

Office of Military Facilities

Southern California Operations Branch

cc: Mr. Robert Woodings  
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Mr. F. Andrew Piszkin, P.E.  
January 12, 2005  
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January 18, 2005

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### SUMMARY REPORT FOR AERIAL PHOTOGRAPH ANOMALY (APHO) 101, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has reviewed the subject document dated April 15, 2003 and supplemental information dated November 10, 2004 and December 14, 2004. The report was submitted in response to DTSC's May 12, 1999 comment letter on the April 1999 Technical Memorandum for APHOs at MCAS El Toro. The summary report presents the results of the historical record search and recommended a no further action status for the site. APHO 101 (also referenced as Science Applications International Corporation (SAIC) 157) was identified in a June 21, 1967 photo as areas of extraction and filling at Fuel road and Quarry Road.

The summary report and supplemental information indicated that the excavation and fill activities seen in the 1967 aerial photograph was the result of the construction of Tank Farm 555 and access road. Historical maps show that APHO 101 coincides with the location of former Tank Farm 555. The tank farm complex consisted of eight underground storage tanks (USTs), fuel pipelines, and access road. The construction and grading plans show that fill material was placed upon the existing ground surface to form the current ground surface.

Mr. F. Andrew Piszkin, P.E.  
January 18, 2005  
Page 2

Based on our review, DTSC concurs with the recommendation of no further action status for APHO 101. If you have any questions, please call me at (714) 484-5419.

Sincerely,



Tayseer Mahmoud  
Senior Hazardous Substances Engineer  
Office of Military Facilities  
Southern California Branch

cc: Mr. Robert Woodings  
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RADIOLOGICAL RELEASE REPORTS, IRP SITE 8 – (UNITS 2, 3, & 5), IRP SITE 12,  
AND IRP SITE 25 (BEE CANYON WASH OUTFALL), FORMER MARINE CORPS AIR  
STATION EL TORO

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) and the California Department of Health Services (DHS), has reviewed the radiological release reports for the subject sites and concurs that the sites meet the Federal radiological release criteria. Copies of DHS' concurrence letters are enclosed.

If you have any questions, please contact me at (714) 484-5419.

Sincerely,


Tayseer Mahmoud  
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Office of Military Facilities  
Southern California Branch

Enclosures

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3737 Main Street, Suite 500  
Riverside, California 92501-3348

Ms. Deirdre Dement  
California Department of Health Service  
Environmental Management Branch  
1616 Capitol Avenue, 2<sup>nd</sup> Floor, MS 7404  
P.O. Box 997413  
Sacramento, California 95899-7413

Ms. Content Arnold  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division - Code 06CC.CA  
1220 Pacific Highway  
San Diego, California 92132-5187

Mr. F. Andrew Piszkin, P.E.  
January 19, 2005  
Page 3

cc: Mr. Karnig Ohannessian  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division - Code 06CC.KO  
1220 Pacific Highway  
San Diego, California 92132-5187

## Memorandum

Date: January 12, 2005

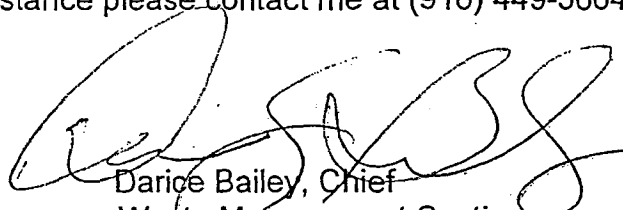
To: Mr. Rick Moss, Chief  
Office of Military Facilities  
Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, California 95826-3200

From: Environmental Management Branch  
P.O. Box 997413, MS 7405  
1616 Capitol Avenue  
Sacramento, California 95899-7413

Subject: Release of Base Realignment and Closure (BRAC) property Site 8 (Units 2, 3 and 5)  
at Marine Corps Air Station (MCAS) El Toro

Upon the request of The Department of Toxic Substance Control (DTSC), the Department of Health Services (DHS) reviewed documents regarding Site 8 (Units 2, 3, and 5) at MCAS El Toro. This documentation indicated that the sites met the Federal radiological release criteria. Therefore, the BRAC property is acceptable for unrestricted release.

This memorandum should clarify that only Units 2, 3, and 5 of Site 8 are addressed in this release, which may not have been clear in the previous memorandum dated December 9, 2004. If you need further assistance please contact me at (916) 449-5664.



Darice Bailey, Chief  
Waste Management Section

cc: Mr. Tayseer Mahmoud  
Department of Toxic Substances Control (DTSC), Region 4  
Office of Military Facilities  
5796 Corporate Avenue  
Cypress, California 90630

## Memorandum

Date: January 12, 2005

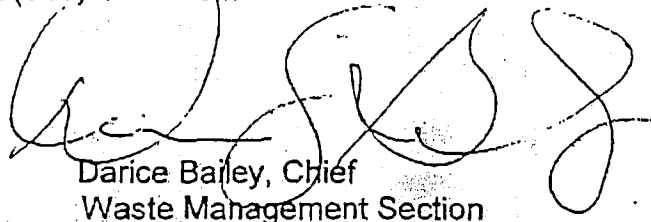
To: Mr. Rick Moss, Chief  
Office of Military Facilities  
Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, California 95826-3200

From: Environmental Management Branch  
P.O. Box 997413, MS 7405  
1616 Capitol Avenue  
Sacramento, California 95899-7413

Subject: Release of Base Realignment and Closure (BRAC) property (Site 12) at Marine Corps Air Station (MCAS) El Toro

Upon the request of The Department of Toxic Substance Control (DTSC), the Department of Health Services (DHS) reviewed documents regarding Site 12 at MCAS El Toro. This documentation indicated that the site met the Federal radiological release criteria. Therefore, the BRAC property is acceptable for unrestricted release.

This memorandum should clarify that this site met the release criteria, which may not have been clear in the previous memorandum dated December 9, 2004. If you need further assistance please contact me at (916) 449-5664.



Darice Bailey, Chief  
Waste Management Section

cc: Mr. Tayseer Mahmoud  
Department of Toxic Substances Control (DTSC), Region 4  
Office of Military Facilities  
5796 Corporate Avenue  
Cypress, California 90630

## Memorandum

Date: January 12, 2005

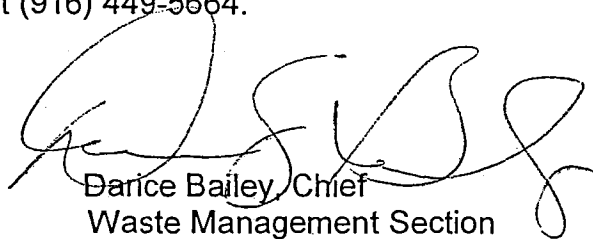
To: Mr. Rick Moss, Chief  
Office of Military Facilities  
Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, California 95826-3200

From: Environmental Management Branch  
P.O. Box 997413, MS 7405  
1616 Capitol Avenue  
Sacramento, California 95899-7413

Subject: Release of Base Realignment and Closure (BRAC) property, Site 25 (Bee Canyon Wash Outfall), at Marine Corps Air Station (MCAS) El Toro

Upon the request of The Department of Toxic Substance Control (DTSC), the Department of Health Services (DHS) reviewed documents regarding Site 25 at MCAS El Toro. This documentation indicated that the site met the Federal radiological release criteria. Therefore, the BRAC property is acceptable for unrestricted release.

This memorandum should clarify that this site met the release criteria, which may not have been clear in the previous memorandum dated December 9, 2004. If you need further assistance please contact me at (916) 449-5664.



Darice Bailey, Chief  
Waste Management Section

cc: Mr. Tayseer Mahmoud  
Department of Toxic Substances Control (DTSC), Region 4  
Office of Military Facilities  
5796 Corporate Avenue  
Cypress, California 90630

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JAN 13 2005  
25589-7413



Alan C. Lloyd, Ph.D.  
Agency Secretary  
Cal/EPA



## Department of Toxic Substances Control

5796 Corporate Avenue  
Cypress, California 90630



Arnold Schwarzenegger  
Governor

January 21, 2005

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, California 92618

### FEDERAL FACILITY AGREEMENT (FFA) EXTENSION REQUEST FOR INSTALLATION RESTORATION PROGRAM (IRP) SITES 1, 2, 17, 18 AND 24, FORMER MARINE CORPS AIR STATION (MCAS) EL TORO, CALIFORNIA

Dear Mr. Piszkin:

The Department of Toxic Substances Control (DTSC) has received your letter dated January 14, 2005, requesting extensions for nine primary submittals. The Federal Facility Agreement (FFA) Appendix A Schedule and causes for the extensions were provided in your letter. The requested extensions and revised deadlines for the submittals are:

#### **IRP Site 1 (Explosive Ordnance Disposal [EOD] Range)**

Draft Remedial Investigation	(06-03-05)
Draft Feasibility Study	(01-05-06)
Draft Proposed Plan	(06-14-06)
Draft Record of Decision	(11-07-06)

#### **IRP Sites 2 and 17 (Magazine Road and Communication Station Landfills)**

Draft Operation and Maintenance Plan	(06-05-06)
Draft Remedial Action Closeout Report	(08-30-06)

Mr. F. Andrew Piszkin, P.E.  
January 21, 2005  
Page 2

**IRP Site 18 (Regional Volatile Organic Compound [VOC] Groundwater plume)**

Preliminary Remedial Design (90%) (03-14-05)  
Final Remedial Design (100%) (05-31-05)

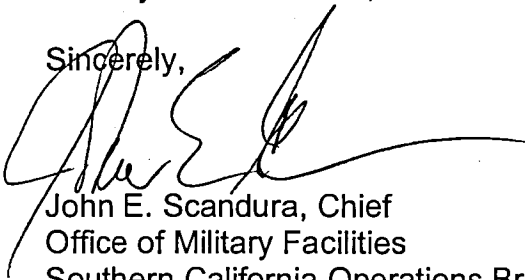
**IRP Site 24 (VOC Source Area)**

Draft Operation and Maintenance Plan (09-11-06)

Please note that there is a typing error in the extension date for the Final Remedial Design (100%) for Site 18 on page 2 of your request letter. The revised deliverable date on page 2 shows the revised due date as May 31, 2006. The revised due date should be May 31, 2005 as stated on the third page of your letter.

DTSC concurs with the Department of Navy that good cause exists for the requested extensions of the FFA schedule pursuant to section 9.2 of the FFA. Therefore, the requested extensions are hereby granted. If you have any questions, please contact Mr. Tayseer Mahmoud, Senior Hazardous Substances Engineer, at (714) 484-5419.

Sincerely,



John E. Scandura, Chief  
Office of Military Facilities  
Southern California Operations Branch

cc: Mr. Robert Woodings  
Restoration Advisory Board Co-chair  
23161 Lake Center Drive, Suite 100  
Lake Forest, California 92630

Ms. Marcia Rudolph  
Restoration Advisory Board Subcommittee Chair

[REDACTED]

Mr. Richard Muza  
Remedial Project Manager  
U. S. Environmental Protection Agency Region IX  
Superfund Division (SFD-8-1)  
75 Hawthorne Street  
San Francisco, California 94105-3901

Mr. F. Andrew Piszkin, P.E.  
January 21, 2005  
Page 3

cc: Ms. Polin Modanlou  
County of Orange  
Planning and Development Services Department  
300 North Flower Street, 3<sup>rd</sup> Floor  
Santa Ana, California 92703

Mr. Randy Styner  
Orange County Environmental Health Care Agency  
1241 East Dyer Road, Suite 120  
Santa Ana, California 92705

Mr. Roy Herndon  
Orange County Water District  
P.O. Box 8300  
Fountain Valley, California 92728

Mr. Steven Malloy  
Irvine Ranch Water District  
P.O. Box 57000  
Irvine, California 92619

Mr. John Broderick  
Remedial Project Manager  
California Regional Water Quality Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3348

Ms. Content Arnold  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division - Code 06CC.CA  
1220 Pacific Highway  
San Diego, California 92132-5187

Ms. Karen Baker, CEG, CHG, Chief  
Geology, Permitting and Corrective Action Branch  
Department of Toxic Substances Control  
5796 Corporate Avenue  
Cypress, California 90630





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

6 December 2004

Mr. F. Andrew Pizskin  
Department of the Navy  
BRAC Program Management Office West  
1230 Columbus Street, Suite 1100  
San Diego, California 92101

Subject: Final Radiological Release Report for IRP Site 8  
(Units 2, 3, & 5), IRP Site 12 and IRP Site 25 (Bee  
Canyon Wash Outfall)  
Former Marine Corps Air Station, El Toro, California

Mr. Pizskin:

The U.S. Environmental Protection Agency (EPA) has reviewed the subject final report dated November 2004. We accept the report as presented.

If you should have any questions/concerns, please contact me at 415-972-3349.

Sincerely,

A handwritten signature in dark ink, appearing to read "Rich Muza", is positioned above the typed name.

Rich Muza, RPM  
Superfund Division

cc. Karnig Ohannessian, DoN  
Content Arnold, DoN  
Frank Cheng, DTSC  
John Broderick, RWQCB  
Bob Woodings, RAB  
Marcia Rudolph, RAB



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

20 December 2004

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
DoN BRAC Program Management Office West  
1230 Columbia Street, Suite 1100  
San Diego, California 92101

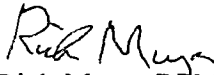
RE: EPA Review Comments on the Draft Technical Memorandum, Aquifer Test, IRP Site 2,  
Magazine Road Landfill, Former Marine Corps Air Station El Toro, California

Dear Mr. Piszkin:

EPA has reviewed the above referenced document in support of continuing remedial action evaluation at IRP Site 2. Although this document is not a Federal Facility Agreement primary deliverable, we believe that addressing these comments will provide a better technical document to support development and evaluation of potential remedial alternatives at the site.

If you should have any questions, please feel free to contact me at 415-972-3349.

Sincerely,

  
Rich Muza, RPM  
Federal Facility and Site Cleanup Branch

cc: Gordon Brown, NAVFAC EFD Southwest  
Content Arnold, NAVFAC EFD Southwest  
John Broderick, RWQCB  
Tayseer Mahmoud, DTSC  
Robert Woodings, RAB Co-Chair  
Marcia Rudolph, RAB Subcommittee Chair  
Herb Levine, EPA

**Comments on the Draft Technical Memorandum, Aquifer Test, IRP Site 2, Magazine Road  
Landfill, Former Marine Corps Air Station El Toro, California**

1. Section 4.2.1, Page 4-7 – “The sampling frequency is shown in Table 4-1.” This information is provided in Table 3-2. It is recommended that this citation be corrected.
2. Section 5.2.2, General – Throughout this discussion the term “recharge” is used and a corresponding magnitude, typically in feet, is provided in response to the different precipitation events. Many of the wells/piezometers that were monitored are completed at depth within distinct zones that are semi-confined to confined in nature. As such, it is confusing to describe recharge occurring at magnitudes of up to 15 feet as monitored in a semi- to confined system when this response is a measurement of the potentiometric surface. Although this issue is introduced in the initial paragraph of this section, it is recommended that additional clarification and discussion be provided within each sub-section, as warranted, to further explain that the measured response in almost all cases is to the potentiometric surface and not a physical increase within the water-table surface.
3. Section 5.2.2.1, Page 5-18 – “Recharge time and followed in wells/piezometers to the west with recharge amounts less than adjacent in the wash.” This statement does not make sense and it is recommended that it be re-written.
4. Figure 5-7 – The data for one well/piezometer is plotted in yellow. However, on the figure “legend” no well/piezometer is identified to be color-coded in yellow. What well/piezometer is depicted on this figure in yellow?
5. Section 5.2.3.1, Page 5-35 – It is recommended that Figure 5-13 be cited in the final paragraph of this sub-section as the source of the data for the wells/piezometers discussed here.
6. Section 5.2.4, Page 5-36 – The range of estimated transmissivity provided in the last paragraph here does not match that provided in Table 5-10. The lowest determined transmissivity value was actually reported as 3.0 feet<sup>2</sup>/day at observation well 02PZ06A. It is recommended that this citation be corrected.
7. Section 5.2.5.2, Page 5-45 – “Thus many wells influenced by pumping water elevations higher than the beginning of the test. Therefore, estimating the capture zone during this period potential lead to unrealistic results.” These statements do not make sense and it is recommended that they be re-written.
8. Section 5.2.5.4, Page 5-45 & Table 5-11 – The last paragraph includes a discussion on actual measured drawdown verse theoretical calculated drawdown in the pumping wells. However, this section and Table 5-11, which is cited in the paragraph in question, address theoretical capture zones for the pumping wells. It is recommended that this paragraph be re-written.
9. Plate 1 – The map for cross-section A-A' shows this section line to run from the southwest (at A) to the northeast (at A'). However, on the cross-section the directional label for both A and A' is

is given as "northeast". It is recommended that this citation be corrected.

10. Plate 3 – The map for cross-section A-A' shows this section line to run from the southwest (at A) to the northeast (at A'). However, on the cross-section the directional label for both A and A' is given as "northeast". It is recommended that this citation be corrected.

11. Section 5.4.3, Page 5-67 – "Based on these data, it is inferred that HZ-1 is isolated from the shallower zone (HZ-3) screened by piezometer 02PZ09A." In reviewing Plate 3, piezometer 02PZ09A is completed in hydrogeologic zone HZ-4. It is recommended that this citation be corrected.

12. Section 5.4.3, Page 5-67 – "Based on this information, it is inferred that HZ-2 is isolated from the shallower HZ-3..." In reviewing Plate 3, hydrogeologic zone HZ-2 underlies hydrogeologic zone HZ-5; is this the case? Elsewhere in this paragraph hydrogeologic zone HZ-3 is referred to as overlying hydrogeologic zone HZ-2. It is recommended that this issue be clarified.

13. Section 5.4.3, Page 5-68 – "..., the transmissivity in HZ-4 was calculated to range from 12 ft<sup>2</sup>/day to 240 ft<sup>2</sup>/day." According to the results provided in Table 5-10, the low end of the range for transmissivity for hydrogeologic zone HZ-4 is 9 ft<sup>2</sup>/day. It is recommended that this citation be corrected.

14. Section 5.5.2, Page 5-72 – "Well 02NEW26 ... TCE was non-detect, however, PCE was estimated at 0.4 ug/l" According to the data shown on Figure 5-21, TCE was detected at 3.5 ug/l in 02NEW26. The data for wells 02NEW26 and 02NEW27 are not provided in Appendix F – Analytical Results so the data discrepancy between that provided in the text verse the figure could not be determined. It is recommended that this issue be clarified.

15. Section 5.5.2, Page 5-72 – "However, a TCE at 0.4 ug/l in well 02NEW01 suggests that the vertical migration of TCE." This statement does not make sense and it is recommended that it be re-written.

16. Section 6.2.5, Page 6-3 – See General comment 2 above.

17. Section 6.3.1.1, Page 6-3 – "No further corrective action should be required for the PCE plume." The highest concentrations of PCE present at Site 2 are slightly above the MCL of 5 ug/l. While the PCE concentration in well 02PZ07 declined from baseline (5.8 ug/l) to post-aquifer test (3.9 ug/l), the opposite condition occurred in well 02NEW22 with a baseline of 5.3 ug/l to post-aquifer test level of 6.9 ug/l. As such, it would be warranted that remedial actions be evaluated for the PCE plume to provide a potential contingency remedy should concentrations increase in future monitoring and remedial actions be deemed necessary.

18. Section 6.4, Page 6-4 – Based on the information on contaminant mass removal provided in Section 5.2.6, it was determined that a pump and treat system "would not be efficient for contaminant mass removal" at this site. However, the information provided in the conclusions suggests the opposite for the possible extraction and treatment of the VOCs. Which conclusion

does the DoN support? It is recommended that this issue be clarified.

19. Appendix H, General – Many of the aquifer test data plots do not provide the scale values on the y-axis. (See the plot for "Pumping Test No. 02DGMW60, Observation Well: 02PZ05" for the first example of this omission.)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

10 January 2005

Mr. F. Andrew Pizskin  
Department of the Navy  
BRAC Program Management Office West  
1230 Columbia Street, Suite 1100  
San Diego, California 92101

Subject: Draft Radiological Release Report for Former Sites of the Radium Plaque  
Adaptometer Building and Aircraft Parts Yard  
Former Marine Corps Air Station, El Toro, California

Mr. Pizskin:

The U.S. Environmental Protection Agency (EPA) has reviewed the subject draft final report dated December 2004. We have no comments on the document as presented.

If you should have any questions/concerns, please contact me at 415-972-3349.

Sincerely,

A handwritten signature in black ink, which appears to read "Rich Muza". The signature is written in a cursive, flowing style.

Rich Muza, RPM  
Superfund Division

cc. Karnig Ohannessian, DoN  
Content Arnold, DoN  
Frank Cheng, DTSC  
John Broderick, RWQCB  
Bob Woodings, RAB  
Marcia Rudolph, RAB



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

20 January 2005

Mr. F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
7040 Trabuco Road  
Irvine, California 92618

RE: Approval of the 100 Percent Design Submittal, Shallow Groundwater Unit Remedial Action Installation Restoration Program Site 24 Volatile Organic Compounds Source Area, Former Marine Corps Air Station (MCAS) El Toro, California

Dear Mr. Piszkin:

The EPA has reviewed the subject document with a focus on the Department of the Navy's (DoN) response to our comments on previous design submittals. We approve the 100 Percent Design Submittal for Site 24 at MCAS El Toro as presented and provide the following comments for the DoN's consideration in implementing this remedial action.

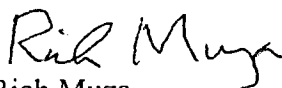
1. Section 4.4.1.1, Page 4-8 -- It is recommended that no worker enter a trench that is greater than five feet deep unless that trench has been properly-shored; the "competent person" must agree that the trench has been properly shored.
2. Section 7, General -- The proposed boundary and off-site (IRP Site 18) monitoring network is rather limited in extent. EPA has concerns as to whether the proposed locations will be adequate to evaluate capture at the base boundary and off-site. It is recommended that the DoN's plans allow for adding monitoring wells based on data gaps evaluations after the system is in operation.
3. Appendix F, Design Specifications, Section 02525, Page 4 -- The DoN has concluded that there is no need for water-tight well vaults. The extraction wells to be installed under this effort fall into a grey area of the regulations. If the wells were being used as water supply wells, pitless adapters would be required; if the wells were being used for monitoring, water-tight well vaults would be required. Wells being used to extract ground water for production of grey-water do not fall into either category. It is recommended that the DoN discuss this issue with the controlling agency (i.e., Orange County Environmental Health Department) to assure that the Department agrees that

water-tight well vaults are not required in this case since retrofitting the vaults at a later time will be expensive.

4. Appendix H, Construction Quality Control Plan, Appendix G – There is still some confusion in the checklists regarding the different purposes of the preparatory, initial, and follow-up inspections. It is recommended that the Navy review the Naval Facilities Command Unified Facilities Guide Specification UFGS-01450N (Construction Quality Control) dated April 2004 for definitions and revise the checklists as necessary.

If you should have any questions, please feel free to contact me at 415-972-3349.

Sincerely,



Rich Muza  
Remedial Project Manager  
Federal Facility and Site Cleanup Branch

cc Content Arnold, SWDIV  
Karnig Ohannessian, SWDIV  
Tayseer Mahmoud, DTSC  
Frank Cheng, DTSC  
John Broderick, RWQCB  
Bob Woodings, RAB Co-Chair  
Marcia Rudolph, RAB Subcommittee Chair





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

25 January 2005

Mr F. Andrew Piszkin  
BRAC Environmental Coordinator  
Base Realignment and Closure  
Marine Corps Air Station El Toro  
7040 Trabuco Road  
Irvine, CA 92618

RE: Federal Facility Agreement (FFA) Appendix A Schedule and Extension Request for  
Installation Restoration Program (IRP) Sites 1, 2, 17, 18, and 24  
Former Marine Corps Air Station (MCAS) El Toro, California

Dear Mr. Piszkin:

EPA has received the Department of the Navy's (DoN) updated MCAS El Toro FFA Appendix A Schedule for primary submittal documents and request for extensions for IRP sites 1, 2, 17, 18, and 24. We also appreciate receiving the detailed IRP sites schedules for our records to track advancement of IRP site work.

EPA has been involved in the discussions focusing on the myriad of issues that are delineated for each of the IRP sites in regard to the extension requests. Therefore, EPA concurs with the requests for extension for the subject IRP sites as per the revised Appendix A provided by the DoN with the correction noted by the Department of Toxic Substances Control in their 12 January 2005 memorandum taken into account. We anticipate that the extensions involving the need to acquire additional information for the selection and/or implementation of remedial actions at the IRP sites at the former MCAS El Toro will allow for the development of paths forward for these sites that are acceptable to all parties involved.

In addition, EPA would like to call for discussions with the BRAC Closure Team (BCT) in the near term in regard to the future schedule of CERCLA activities at Anomaly Area 3. In the submittal only a Draft Remedial Investigation (RI) delivery date is provided. We understand the desire of the DoN to acquire additional ground-water quality monitoring data in support of the RI and know that this field activity will be occurring in the near future. However, we are concerned over delays in developing target dates for further FFA deliverables for the selection and implementation of remedial actions at this site. We recommend that the DoN consider

developing schedules based on the various outcomes of the additional data collection efforts as a first step for discussions with the BCT on a path forward for this site.

If you should have any questions, please feel free to call me at 415-972-3349.

Sincerely,



Rich Muza  
Remedial Project Manager  
Federal Facility and Site Cleanup Branch

cc. Content Arnold, SWDIV  
Frank Cheng, DTSC  
John Broderick, RWQCB  
Steve Malloy, IRWD  
Roy Herndon, OCWD  
Randy Styner, OCEHCA  
Bob Woodings, RAB Co-Chair  
Marcia Rudolph, RAB Subcommittee Chair

# IRVINE RANCH WATER DISTRICT

## MEMORANDUM

TO: MCAS El Toro  
Restoration Advisory Board

DATE: January 26, 2005

FROM: Steve Malloy

FILE NO.: RAB Update 1-26-05.doc

SUBJECT: Irvine Desalter Project Update

### Well Sites

- All well sites acquire as follows:
- Non-Potable Well site 78 at Culver & Warner already owned by IRWD
- Non-Potable Well site ET-1 at Jeffrey & Irvine Center Drive already owned by IRWD
- Non-Potable Well site ET-2 at Culver & Irvine Center Drive acquired from The Irvine Company
- Injection Well IDP-1 on-base at Marine Way already acquired for project by OCWD
- Potable Well site 76 in Heritage Park acquired from City of Irvine
- Potable Well site 77 at Irvine High School acquired from Irvine Unified School District
- Potable Well site 107 at Culver & I-5 acquired from The Irvine Company
- Potable Well site 110 at Jeffrey & I-5 acquired from The Irvine Company

### Well Drilling

- Non-Potable Well 78 existing (600 gpm)
- Non-Potable Well ET-1 existing (1000 gpm)
- Non-Potable Well ET-2 existing (1300 gpm)
- Potable Well 76 completed (500 gpm).
- Potable Well 77 completed (800 gpm).
- Potable Well 107 existing (700 gpm)
- Potable Well 110 completed (1200 gpm).

### Shallow Groundwater Unit (SGU) Treatment Plant

- Negotiating with The Irvine Company for parcel adjacent to base south of Marine Way.
- Currently performing injection testing at IDP-1 for up to 550 gpm.
- SGU Treatment Plant construction scheduled August 2005 to April 2006 (same as DON's SGU schedule).

### Principal Aquifer Treatment Plant

- Will use ET-1 site at Jeffrey and Irvine Center Drive.
- PA Treatment Plant construction scheduled August 2005 to April 2006.

### Potable Treatment Plant

- Acquired site on Waterworks Way adjacent to the post office from The Irvine Company.
- Signed plans advertised for bid January 2005.
- Construction contract award scheduled for March 2005.
- Scheduled on-line date June 2006.

### Potable Well Pumps & Pipelines

- Well pump at Well 107 in construction now; completion scheduled for June 2005.
- Well pumps at Wells 76, 77 and 110 construction scheduled for April 2005 to March 2006.
- Will reuse Irvine Company irrigation lines in Culver for raw potable water.
- Will reuse IRWD's "Navy Line" in Irvine Center Drive for raw potable water.
- Pipeline construction scheduled April 2005 to December 2005.

**South Irvine Brine Line**

- Selected alignment in Technology, Barranca Pkwy, and Muirlands to IRWD's Los Alisos Water Reclamation Plant (LAWRP) in Lake Forest.
- Portion from Bake Pkwy to LAWRP to be constructed May to November 2005.
- Remaining portion to be constructed June 2005 to March 2006.
- Booster pumping station at LAWRP to convey brine to South Orange County Wastewater Authority's (SOCWA) Aliso Creek Ocean Outfall to be constructed March 2005 to January 2006.

•

**Permits**

- NPDES permit approved by San Diego RWQCB to add IDP RO brine discharge to SOCWA's Aliso Creek Ocean Outfall, December 8, 2004.

•

**FFA Deliverables to BCT**

- IRWD's 60% *FYI* Submittal to BCT October 2004.
- DON & IRWD working on Settlement Agreement amendment.
- DON & IRWD to submit an Explanation of Significant Differences
- DON & IRWD to submit 90% design submittal for SGU and Principal Aquifer Treatment Facilities
- Current schedule per January 14, 2005, DON time extension request:
- 90% design submittal due March 14, 2005
- 100% design submittal due May 31, 2005